

# Treasury Presentation to TBAC



# Office of Debt Management



Fiscal Year 2016 Q2 Report

# Table of Contents

I.	Executive Summary	p. 4
II.	Fiscal	
	A. Quarterly Tax Receipts	p. 6
	B. Monthly Receipt Levels	p. 7
	C. Eleven Largest Outlays	p. 8
	D. Treasury Net Nonmarketable Borrowing	p. 9
	E. Cumulative Budget Deficits	p. 10
	F. Deficit and Borrowing Estimates	p. 11
	G. Budget Surplus/Deficit	p. 12
III.	Financing	
	A. Sources of Financing	p. 15
	B. OMB's Projections of Net Borrowing from the Public	p. 17
	C. Interest Rate Assumptions	p. 18
	D. Net Marketable Borrowing on "Auto Pilot" Versus Deficit Forecasts	p. 19
IV.	Portfolio Metrics	
	A. Weighted Average Maturity of Marketable Debt Outstanding with Projections	p. 24
	B. Projected Gross Borrowing	p. 25
	C. Maturity Profile	p. 26
V.	Demand	
	A. Summary Statistics	p. 31
	B. Bid-to-Cover Ratios	p. 32
	C. Investor Class Awards at Auction	p. 37
	D. Primary Dealer Awards at Auction	p. 41
	E. Direct Bidder Awards at Auction	p. 42
	F. Foreign Awards at Auction	p. 43

# Section I: Executive Summary



# Highlights of Treasury's May 2016 Quarterly Refunding Presentations to the Treasury Borrowing Advisory Committee (TBAC)

## Receipts and Outlays

- Corporate taxes have been weaker than during the equivalent period last year, potentially attributable to the extension of bonus depreciation and smaller corporate profits.
- Tax refunds are tracking in line with last year's numbers.
- Fiscal year-to-date, Treasury net expenditures rose by \$40 billion, mainly attributable to larger interest expenses (\$28 billion) due to higher inflation compensation on TIPS and higher interest expense on Government Account Series (GAS) debt.
- Medicare outlays were higher by \$19 billion, mostly due to a \$9 billion increase in payments made to prescription drug plans.

## Sources of Financing in Fiscal Year 2016

- Demand for Treasury bills remains strong and is expected to continue to grow through the end of FY 2016. As noted in the February Quarterly Refunding Statement, Treasury believes that it is prudent to increase the level of Treasury bills outstanding over the coming quarters.
- Based on the Quarterly Borrowing Estimate, Treasury's Office of Fiscal Projections currently projects a net borrowing need of \$687 billion for FY 2016.

## Projected Net Marketable Borrowing

- Between FY 2016 and 2018, Treasury's borrowing from the public could rise notably if the Federal Reserve allows the Treasury securities held in the SOMA portfolio to mature.
- There are \$675 billion of Treasury securities in the SOMA portfolio that will mature between FY 2016 and 2018.

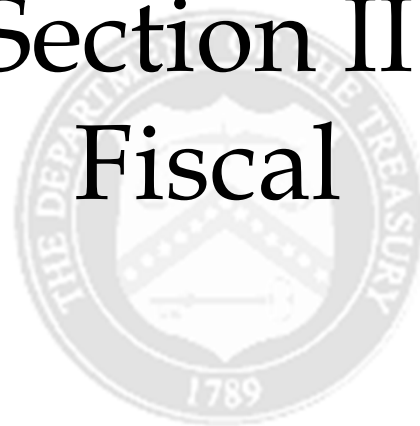
## Bid-to-Cover Ratios (BTC)

- BTC ratios for FRNs and shorter-dated coupons have fallen slightly in recent months, while bills and the longer end of the nominal curve have been little changed.

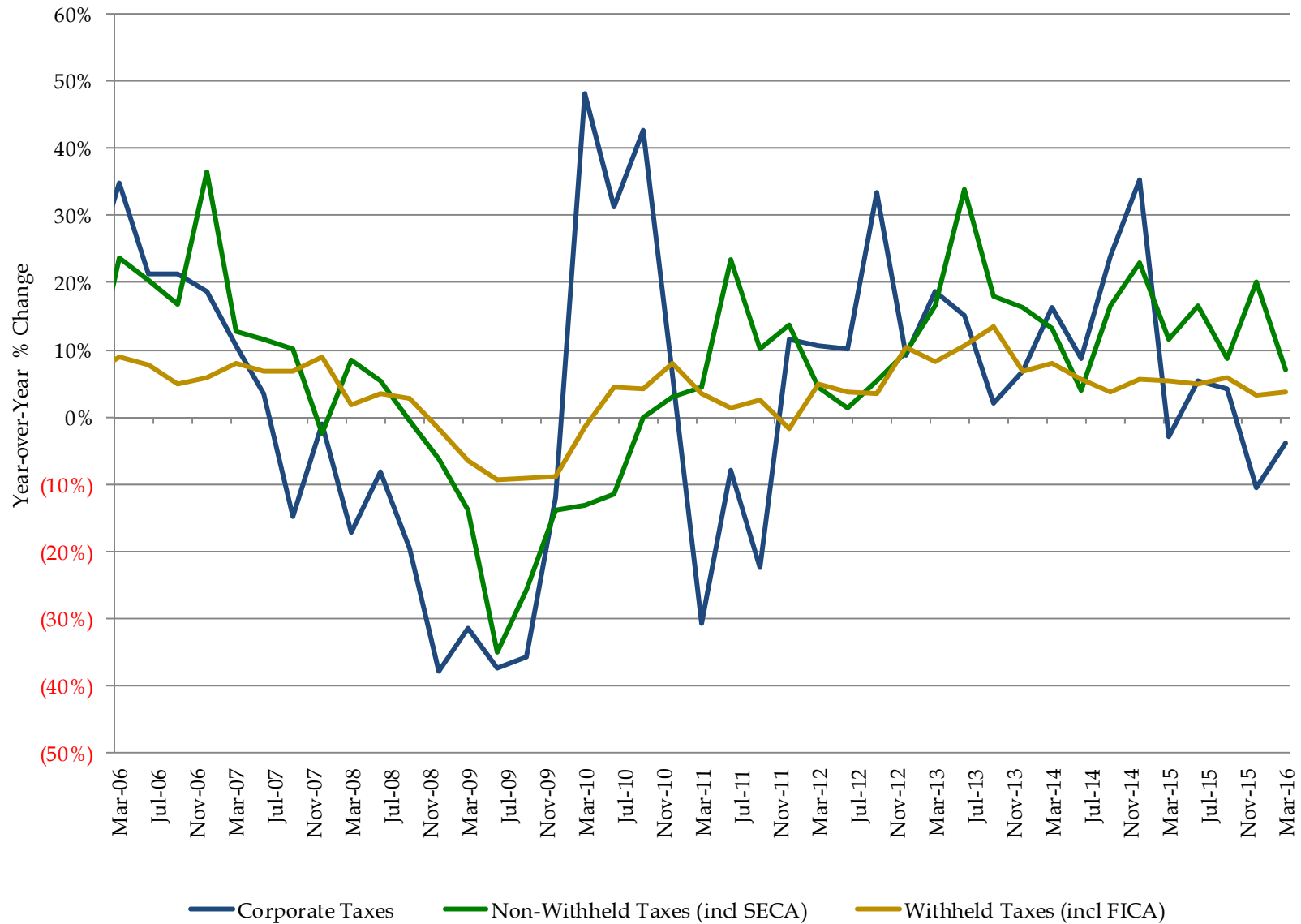
## Investor Class Allotments

- Since the beginning of January, investment fund awards rose substantially in bills, and fell slightly for short coupons (2-, 3-, and 5-Year) and TIPS.
- Primary dealer awards fell slightly in bills, and rose in TIPS.
- Direct bidder awards were modestly higher across most tenors.

# Section II: Fiscal

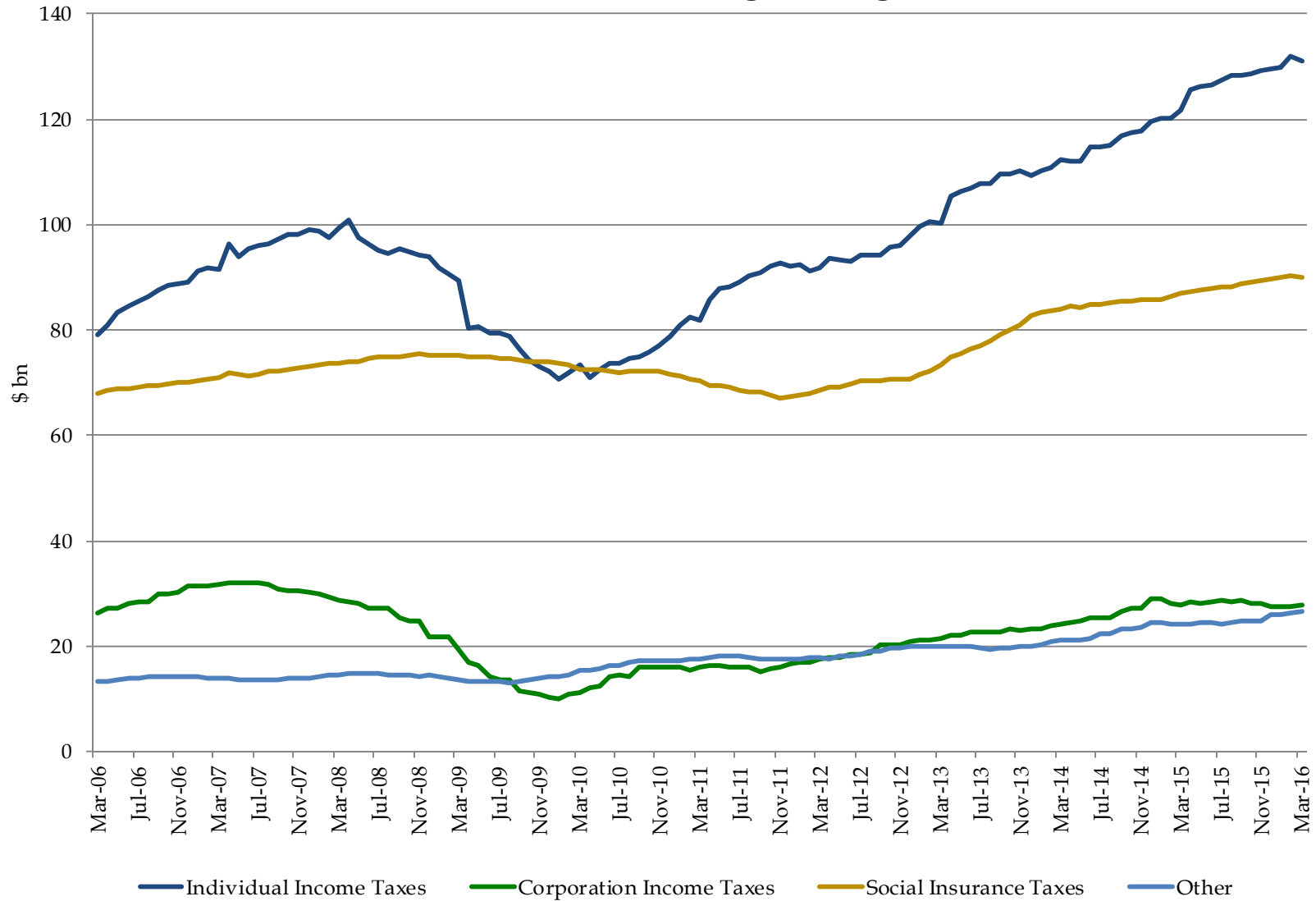


## Quarterly Tax Receipts



Source: United States Department of the Treasury

## Monthly Receipt Levels (12-Month Moving Average)

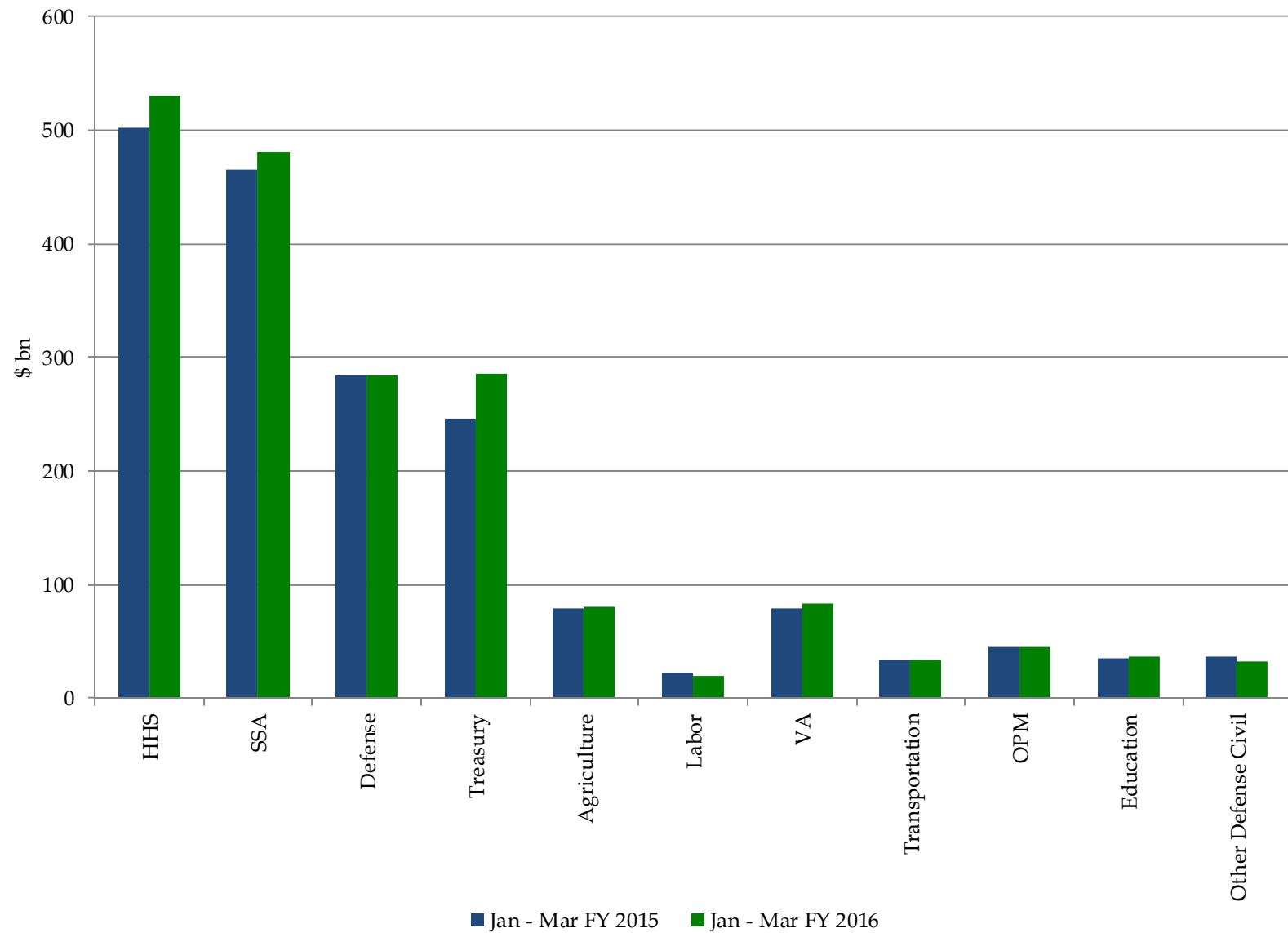


Individual Income Taxes include withheld and non-withheld. Social Insurance Taxes include FICA, SECA, RRTA, UTF deposits, FUTA and RUIA. Other includes excise taxes, estate and gift taxes, customs duties and miscellaneous receipts.

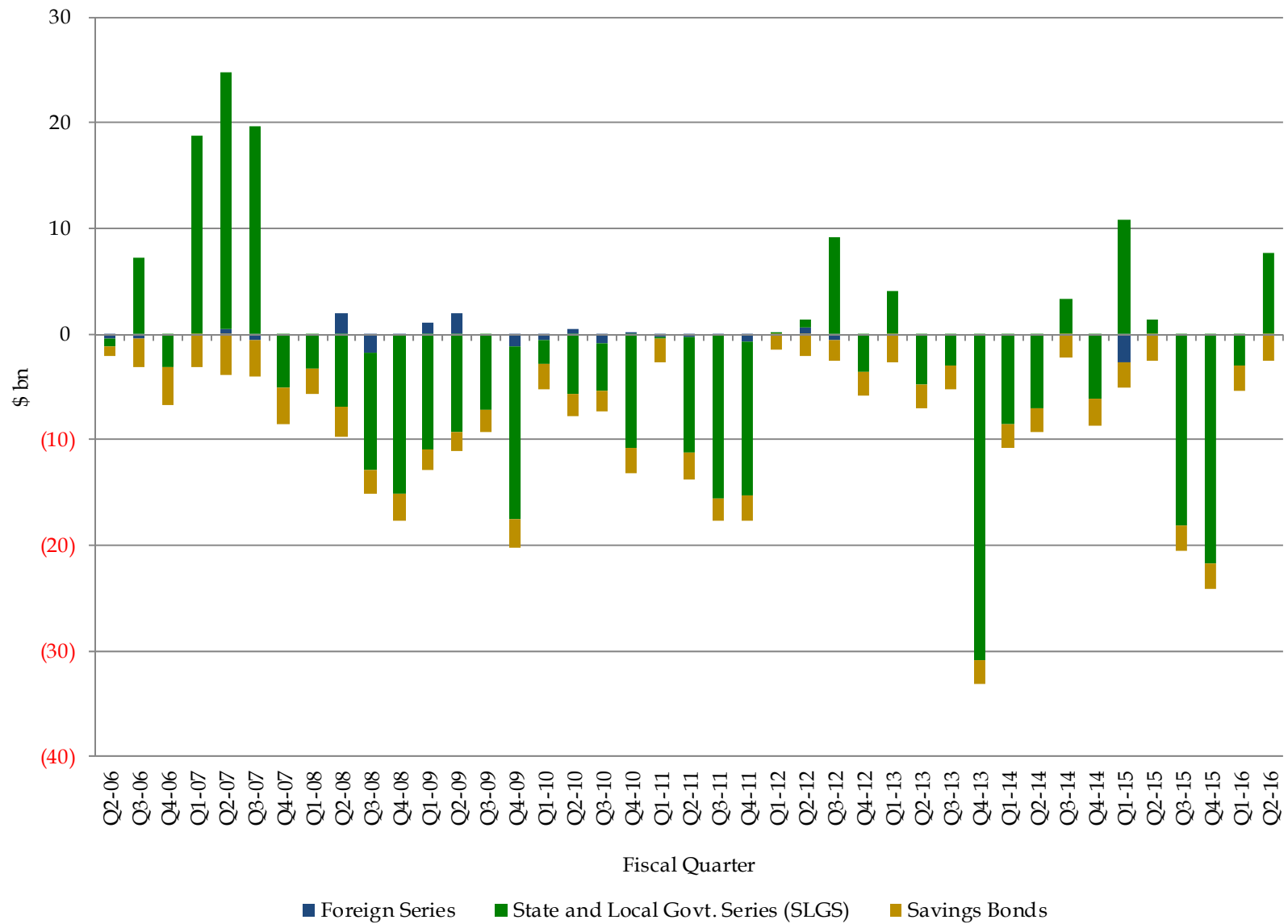
Source: United States Department of the Treasury



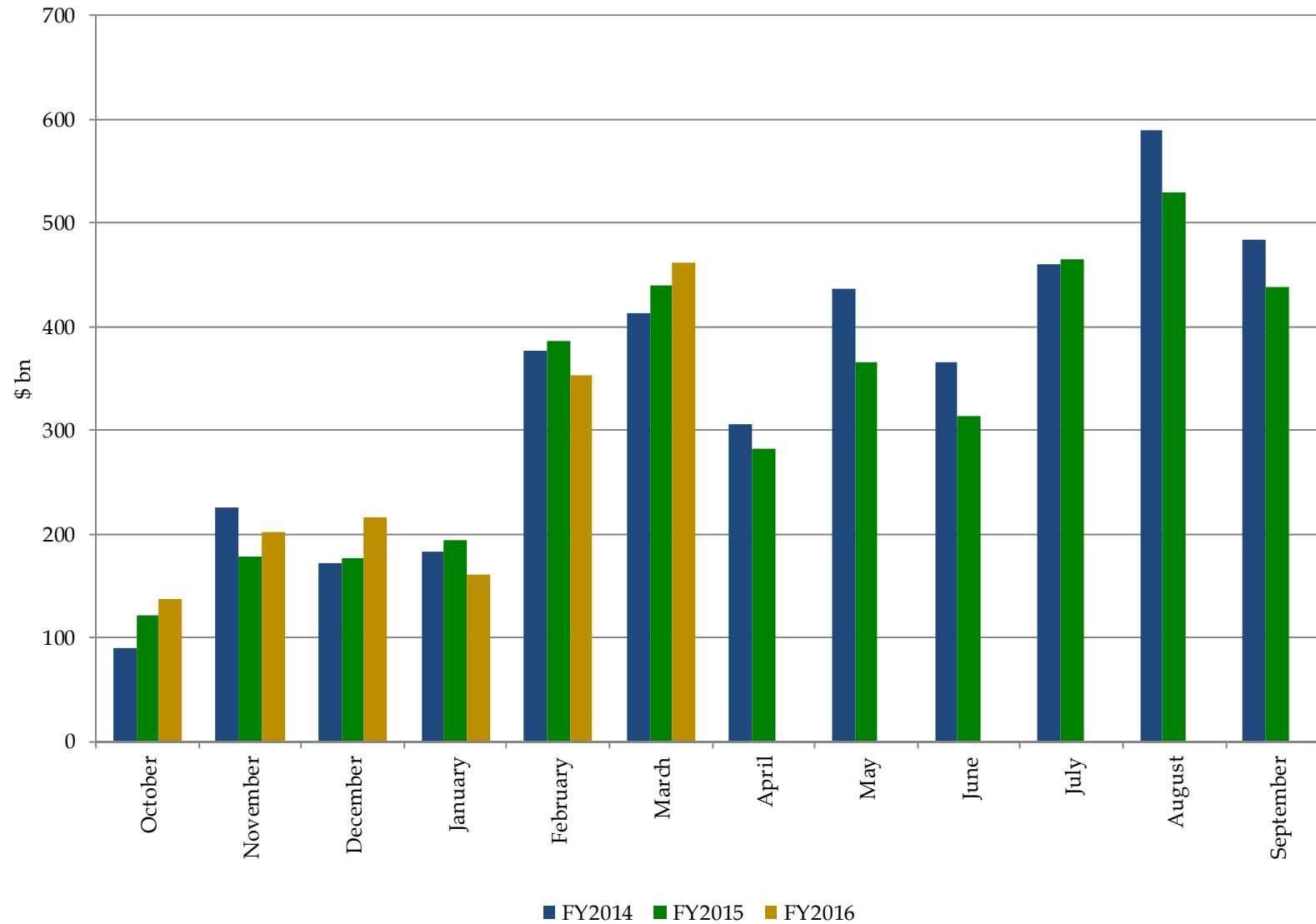
## Eleven Largest Outlays



## Treasury Net Nonmarketable Borrowing



## Cumulative Budget Deficits by Fiscal Year



## FY 2016-2018 Deficits and Net Marketable Borrowing Estimates In \$ billions

	Primary Dealers <sup>1</sup>	CBO <sup>2</sup>	CBO <sup>3</sup>	OMB <sup>4</sup>
FY 2016 Deficit Estimate	532	529	534	616
FY 2017 Deficit Estimate	550	433	550	504
FY 2018 Deficit Estimate	581	383	549	454
FY 2016 Deficit Range	400-595			
FY 2017 Deficit Range	445-650			
FY 2018 Deficit Range	475-710			
FY 2016 Net Marketable Borrowing Estimate	651	829	834	687*
FY 2017 Net Marketable Borrowing Estimate	601	508	621	635
FY 2018 Net Marketable Borrowing Estimate	641	452	606	561
FY 2016 Net Marketable Borrowing Range	420-798			
FY 2017 Net Marketable Borrowing Range	445-750			
FY 2018 Net Marketable Borrowing Range	475-802			
Estimates as of:	Apr-16	Mar-16	Mar-16	Feb-16

<sup>1</sup>Based on primary dealer feedback on April 25, 2016. Estimates above are averages.

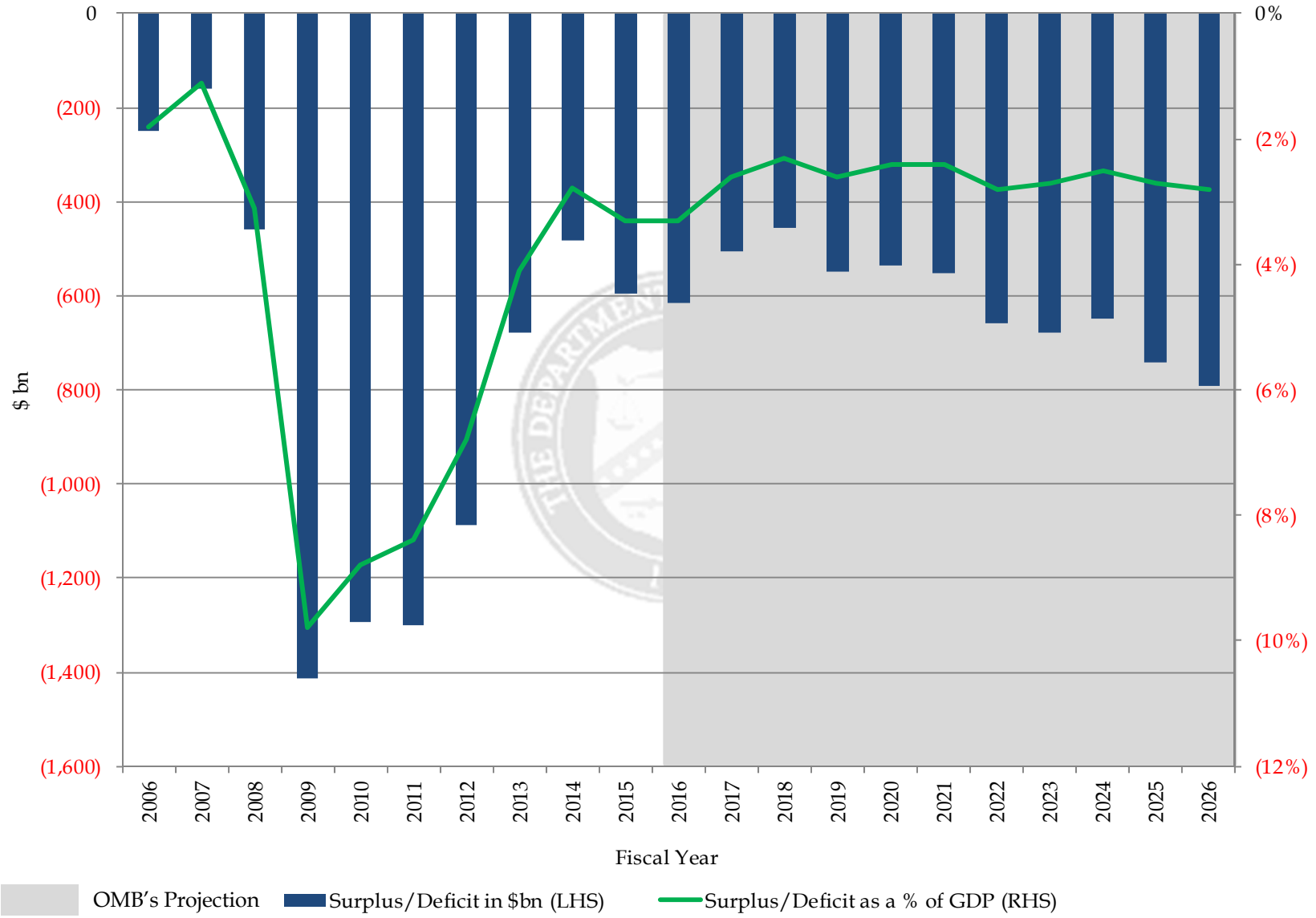
<sup>2</sup>Table 1 and 2 of CBO's "An Analysis of the President's 2017 Budget"

<sup>3</sup>Table 1 and 2 of CBO's "The Budget and Economic Outlook: 2016 to 2026"

<sup>4</sup>Table S-13 of OMB's "Budget of the United States Government, Fiscal Year 2017"

\*OFP's FY 2016 Net Marketable Borrowing Estimate

## Budget Surplus/Deficit



Projections are from Table S-13 of OMB's "Budget of the United States Government, Fiscal Year 2017"

# Section III: Financing



## Assumptions for Financing Section (pages 15 to 22)

- Portfolio and SOMA holdings as of 3/31/2016.
- SOMA reinvestments until Q3 CY2017, and SOMA redemptions until and including February 2022. These assumptions are based on Chair Yellen's December 2015 press conference and the median expectations from the March FRB-NY survey of primary dealers.
- Assumes announced issuance sizes and patterns constant for Nominal Coupons, TIPS, and FRNs as of 3/31/2016, while using an average of ~\$1.6 trillion of Bills outstanding.
- The principal on the TIPS securities was accreted to each projection date based on market ZCIS levels as of 3/31/2016.
- No attempt was made to match future financing needs.



## Sources of Financing in Fiscal Year 2016 Q2

January - March 2016	
Net Bill Issuance	104
Net Coupon Issuance	140
Subtotal: Net Marketable Borrowing	244
Ending Cash Balance	314
Beginning Cash Balance	333
Subtotal: Change in Cash Balance	(20)
Net Implied Funding for FY 2016 Q2*	264

Security	January - March 2016 Bill Issuance			Fiscal Year-to-Date Bill Issuance		
	Gross	Maturing	Net	Gross	Maturing	Net
4-Week	690	650	40	1,155	1,035	120
13-Week	445	349	96	812	669	143
26-Week	370	296	74	719	632	87
52-Week	74	100	(26)	110	175	(65)
CMBs	0	80	(80)	95	120	(25)
Bill Subtotal	1,579	1,475	104	2,891	2,631	260

Security	January - March 2016 Coupon Issuance			Fiscal Year-to-Date Coupon Issuance		
	Gross	Maturing	Net	Gross	Maturing	Net
2-Year FRN	41	41	0	82	41	41
2-Year	93	96	(3)	171	192	(21)
3-Year	74	96	(22)	146	192	(46)
5-Year	123	109	14	228	218	10
7-Year	102	48	53	189	48	140
10-Year	66	22	44	132	45	87
30-Year	41	5	36	83	11	72
5-Year TIPS	0	0	0	16	0	16
10-Year TIPS	29	20	8	42	20	21
30-Year TIPS	9	0	9	16	0	16
Coupon Subtotal	578	438	140	1,106	768	338

Total	2,157	1,913	244	3,996	3,399	598
-------	-------	-------	-----	-------	-------	-----

\*An end-of-March 2016 cash balance of \$314 billion versus a beginning-of-January 2016 cash balance of \$333 billion. By keeping the cash balance constant, Treasury arrives at the net implied funding number.



## Sources of Financing in Fiscal Year 2016 Q3

April - June 2016	
Assuming Constant Coupon Issuance Sizes*	
Treasury Announced Net Marketable Borrowing**	(65)
Net Coupon Issuance	5
Implied Change in Bills	(70)

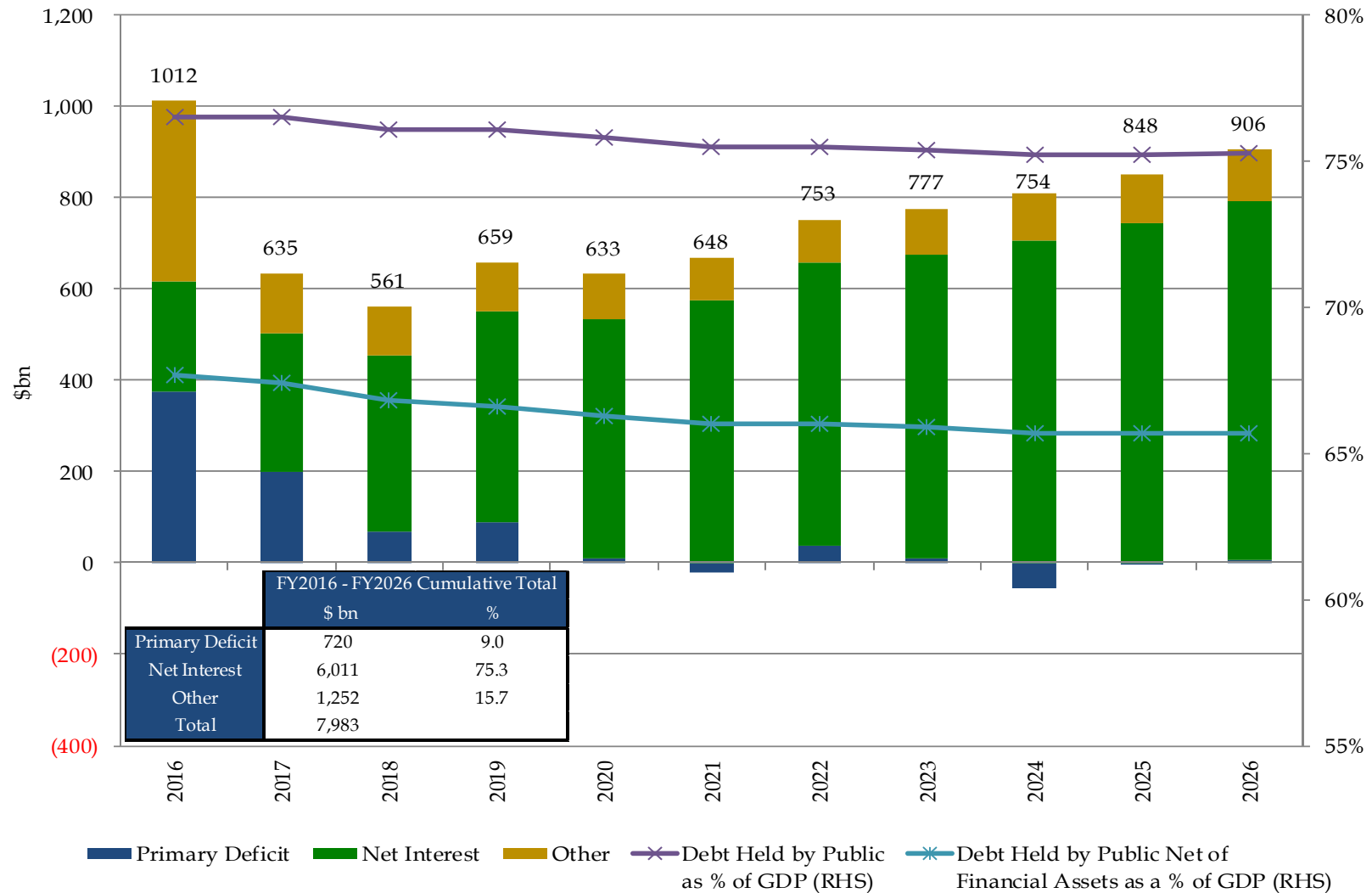
Security	April - June 2016 Coupon Issuance			Fiscal Year-to-Date Coupon Issuance		
	Gross	Maturing	Net	Gross	Maturing	Net
2-Year FRN	41	41	0	123	82	41
2-Year	78	93	(15)	249	285	(36)
3-Year	72	96	(24)	218	288	(70)
5-Year	102	111	(9)	330	329	1
7-Year	84	82	2	273	130	143
10-Year	63	23	40	195	68	127
30-Year	39	19	20	122	30	92
5-Year TIPS	16	41	(25)	32	41	(9)
10-Year TIPS	11	0	11	53	20	32
30-Year TIPS	5	0	5	21	0	21
Coupon Subtotal	511	506	5	1,617	1,274	342

\*Keeping announced issuance sizes and patterns constant for Nominal Coupons, TIPS, and FRNs as of 3/31/2016. Gross issuance does not reflect SOMA reinvestments.

\*\*Assumes an end-of-June 2016 cash balance of \$350 billion versus a beginning-of-April 2016 cash balance of \$314 billion.

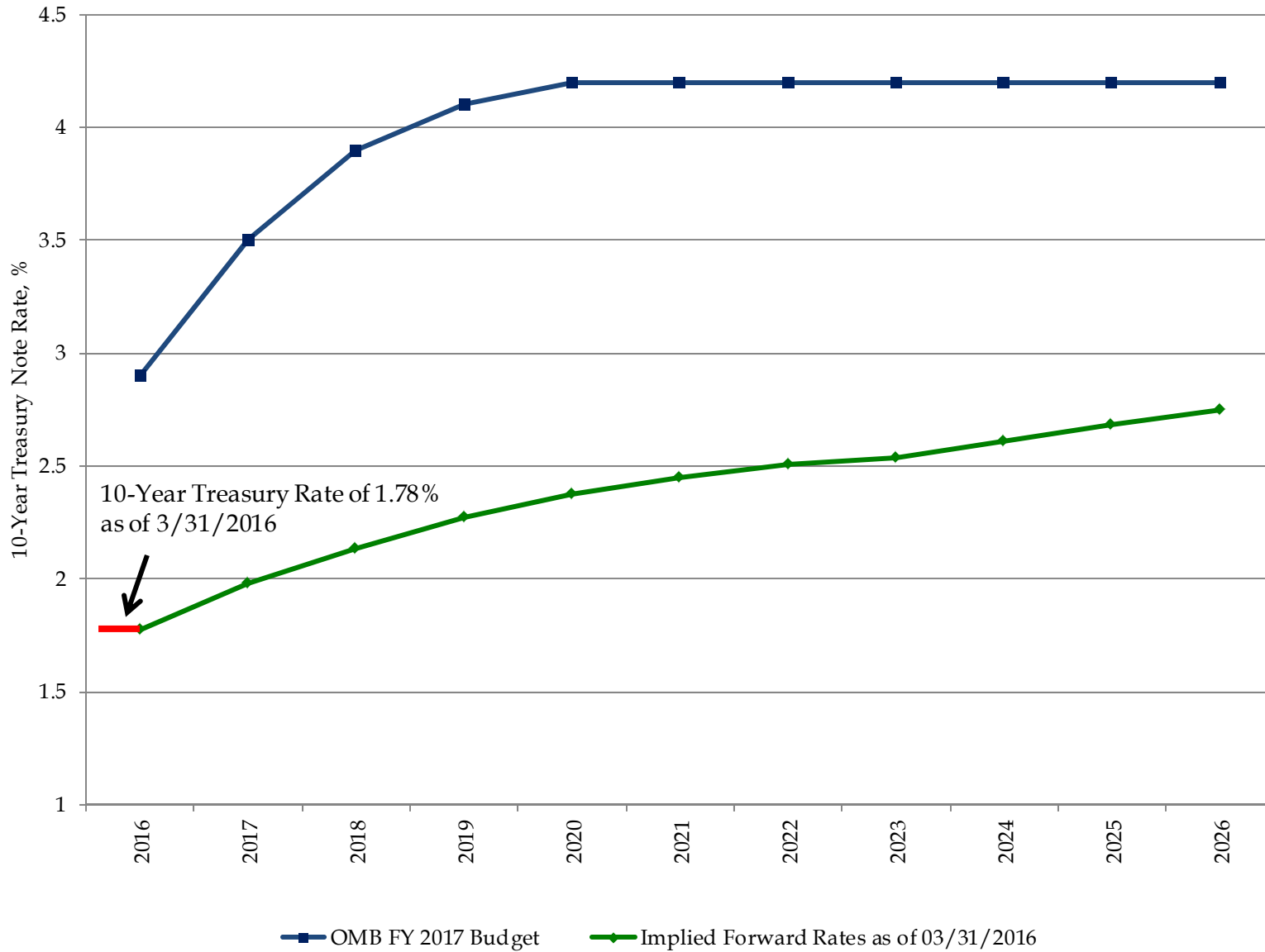
Financing Estimates released by the Treasury can be found here: <http://www.treasury.gov/resource-center/data-chart-center/quarterly-refunding/Pages/Latest.aspx>

## OMB's Projection of Borrowing from the Public



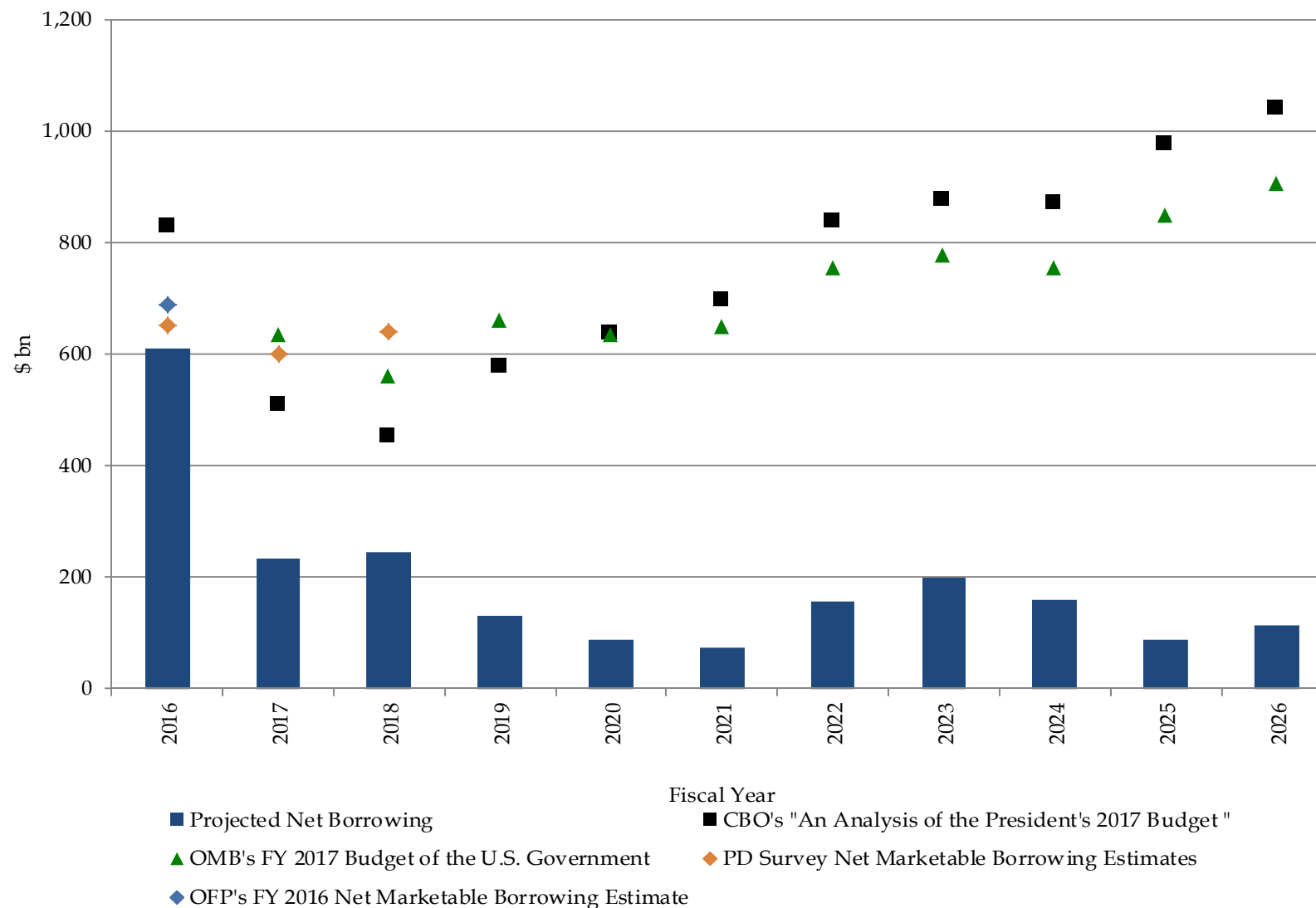
OMB's projections of net borrowing from the public are from Table S-13 of the "Budget of the United States Government, Fiscal Year 2017." Data labels at the top represent the change in debt held by the public in \$ billions. "Other" represents borrowing from the public to provide direct and guaranteed loans.

## Interest Rate Assumptions: 10-Year Treasury Note



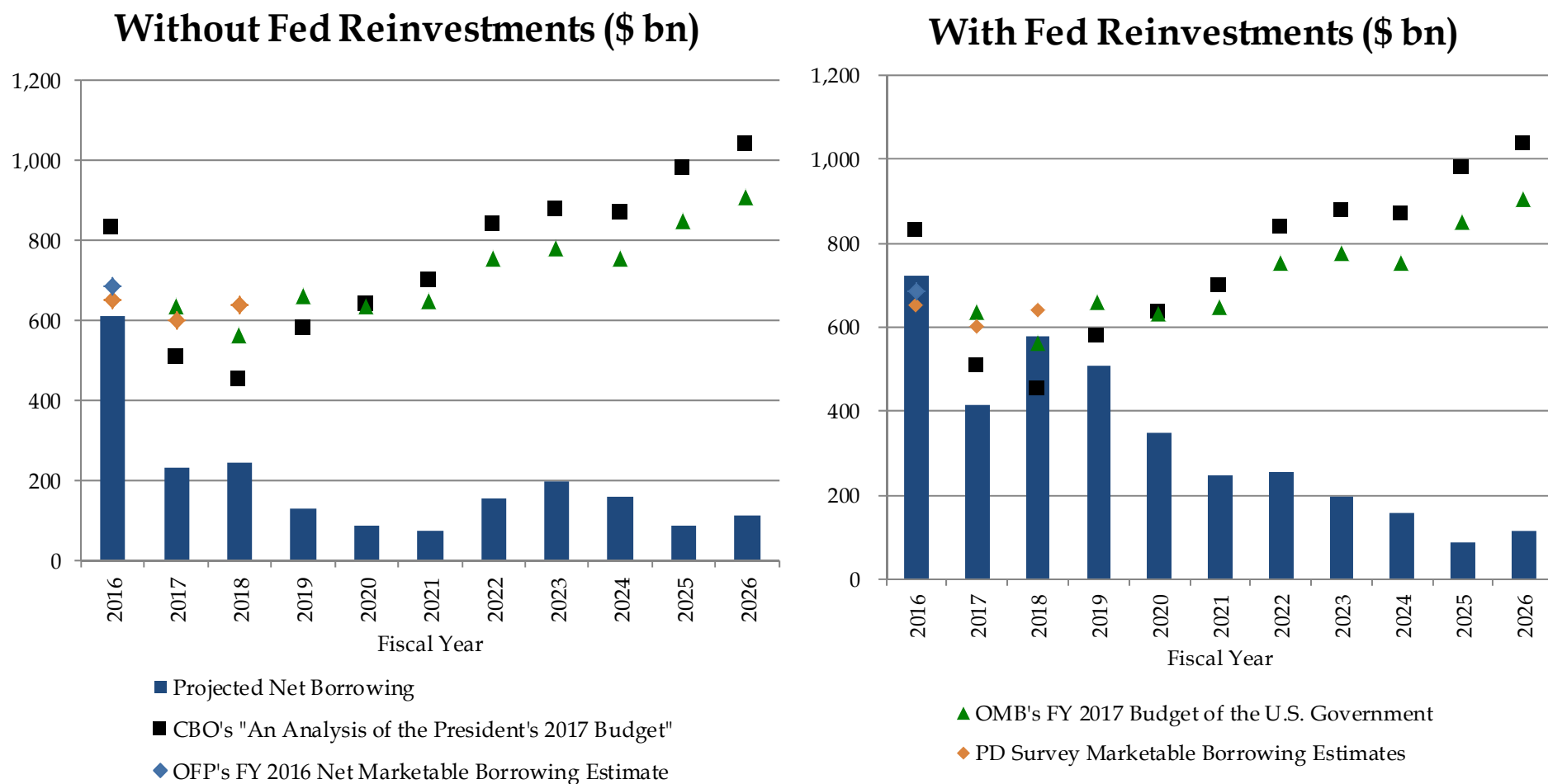
OMB's economic assumption of the 10-Year Treasury Note rates are from Table S-13 of the "Budget of the United States Government, Fiscal Year 2017." The forward rates are the implied 10-Year Treasury Note rates on March 31 of that year.

## Projected Net Borrowing Assuming Constant Future Issuance



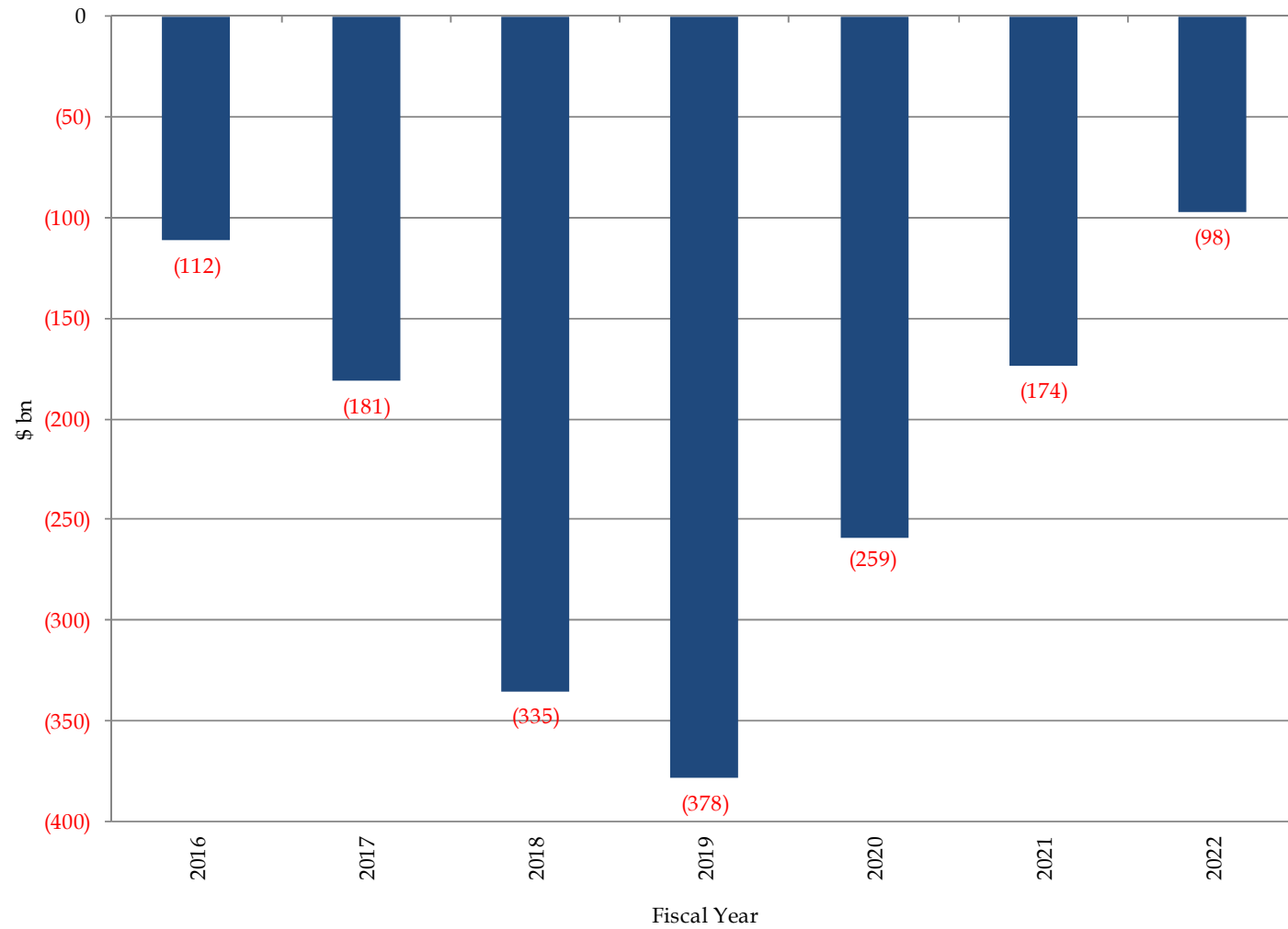
Treasury's primary dealer survey estimates can be found on page 9. OMB's projections of net borrowing from the public are from Table S-13 of the "Budget of the United States Government, Fiscal Year 2017." CBO's estimates of the borrowing from the public are from Table 1 of "An Analysis of the President's 2017 Budget." See table at the end of this section for details.

## Impact of SOMA Actions on Projected Net Borrowing Assuming Future Issuance Remains Constant



Treasury's primary dealer survey estimates can be found on page 9. OMB's projections of net borrowing from the public are from Table S-13 of the "Budget of the United States Government, Fiscal Year 2017." CBO's estimates of the borrowing from the public are from Table 1 of "An Analysis of the President's 2017 Budget." See table at the end of this section for details.

## Additional Funding Gap Assuming No SOMA Roll



## Historical Net Marketable Borrowing and Projected Net Borrowing Assuming Future Issuance Remains Constant, \$ billions

Fiscal Year	Bills	2/3/5	7/10/30	TIPS	FRN	Historical/Projected Net Borrowing Capacity	OMB's FY 2017 Budget of the U.S. Government	CBO's "An Analysis of the President's 2017 Budget "	Primary Dealer Survey
2011	(311)	576	751	88	0	1,104			
2012	139	148	738	90	0	1,115			
2013	(86)	86	720	111	0	830			
2014	(119)	(92)	669	88	123	669			
2015	(53)	(282)	641	88	164	558			
2016	216	(143)	438	59	41	611	687*	829	651
2017	51	(84)	221	47	(0)	234	635	508	601
2018	0	1	202	42	(0)	244	561	452	641
2019	0	20	67	43	0	130	659	578	
2020	0	(12)	83	17	0	88	633	637	
2021	0	(24)	99	(1)	0	73	648	697	
2022	0	36	133	(12)	0	157	753	838	
2023	0	55	153	(10)	1	199	777	876	
2024	0	10	160	(12)	(0)	158	754	870	
2025	0	(12)	154	(54)	(0)	87	848	977	
2026	0	(20)	169	(35)	(0)	114	906	1,038	

Net Borrowing capacity does not reflect SOMA reinvestments.

Treasury's primary dealer survey estimates can be found on page 9. OMB's projections of net borrowing from the public are from Table S-13 of the "Budget of the United States Government, Fiscal Year 2017." CBO's estimates of the borrowing from the public are from Table 1 of "An Analysis of the President's 2017 Budget."

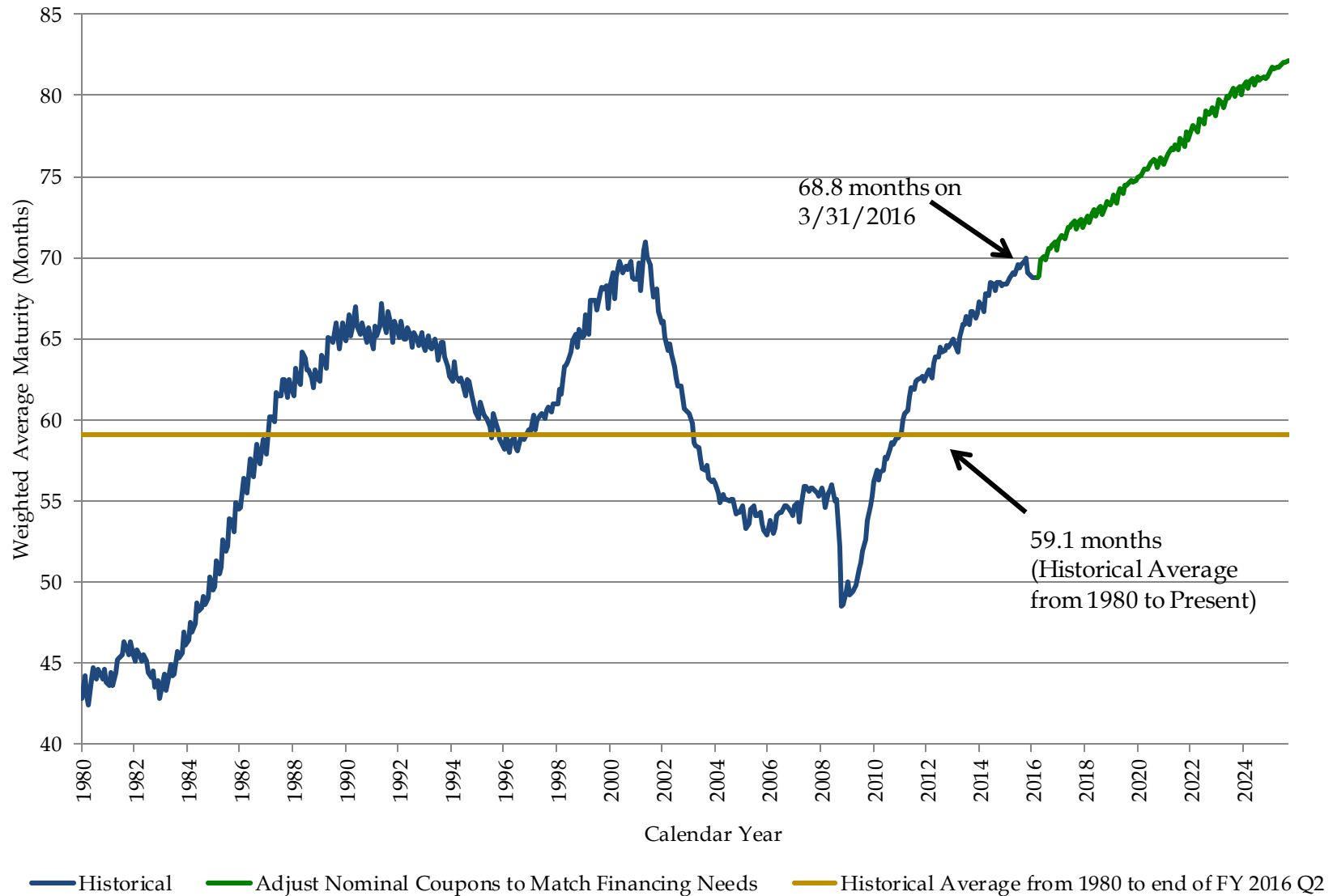
\*OFP's FY 2016 Net Marketable Borrowing Estimate

# Section IV: Portfolio Metrics



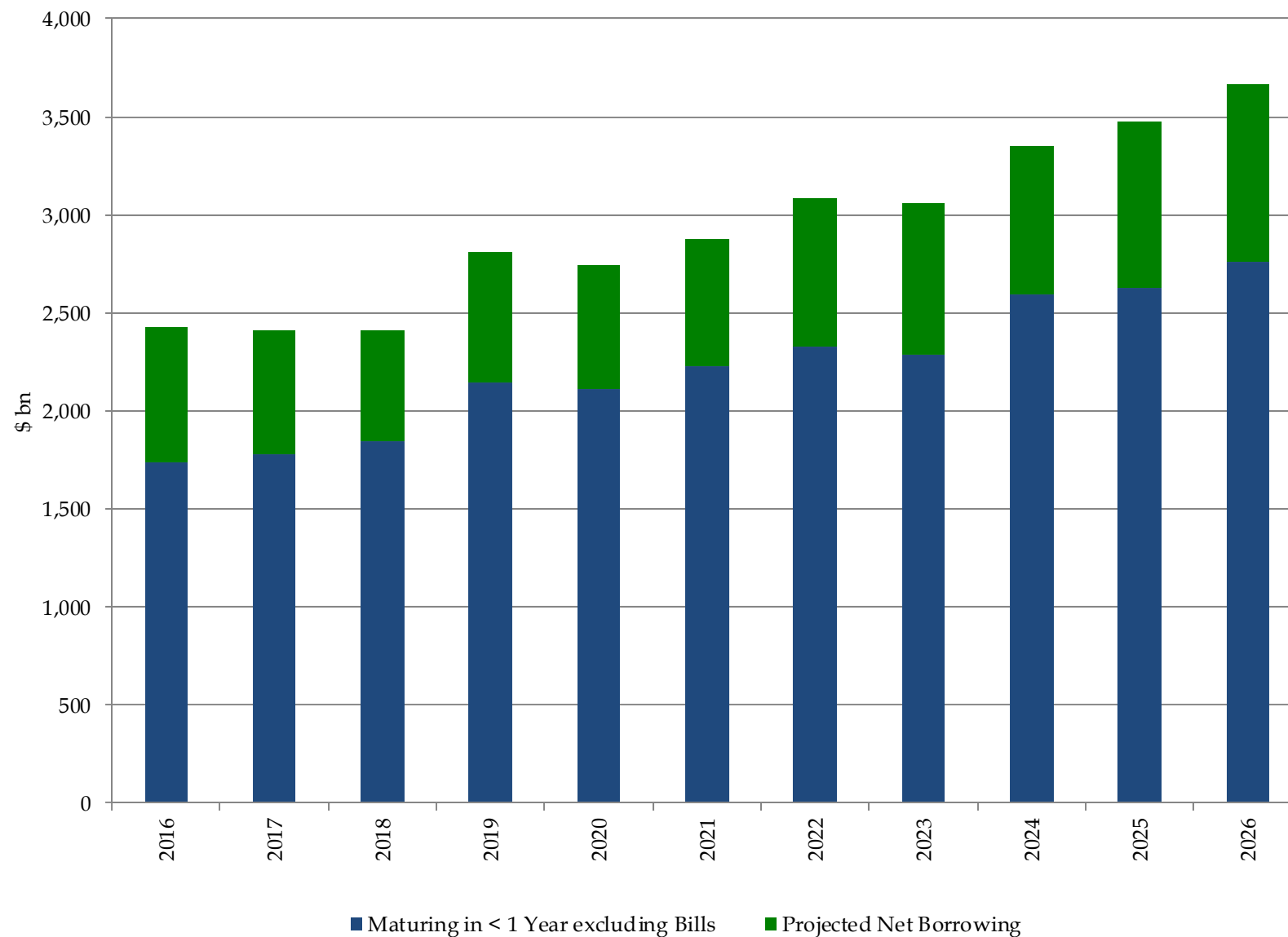


## Weighted Average Maturity of Marketable Debt Outstanding



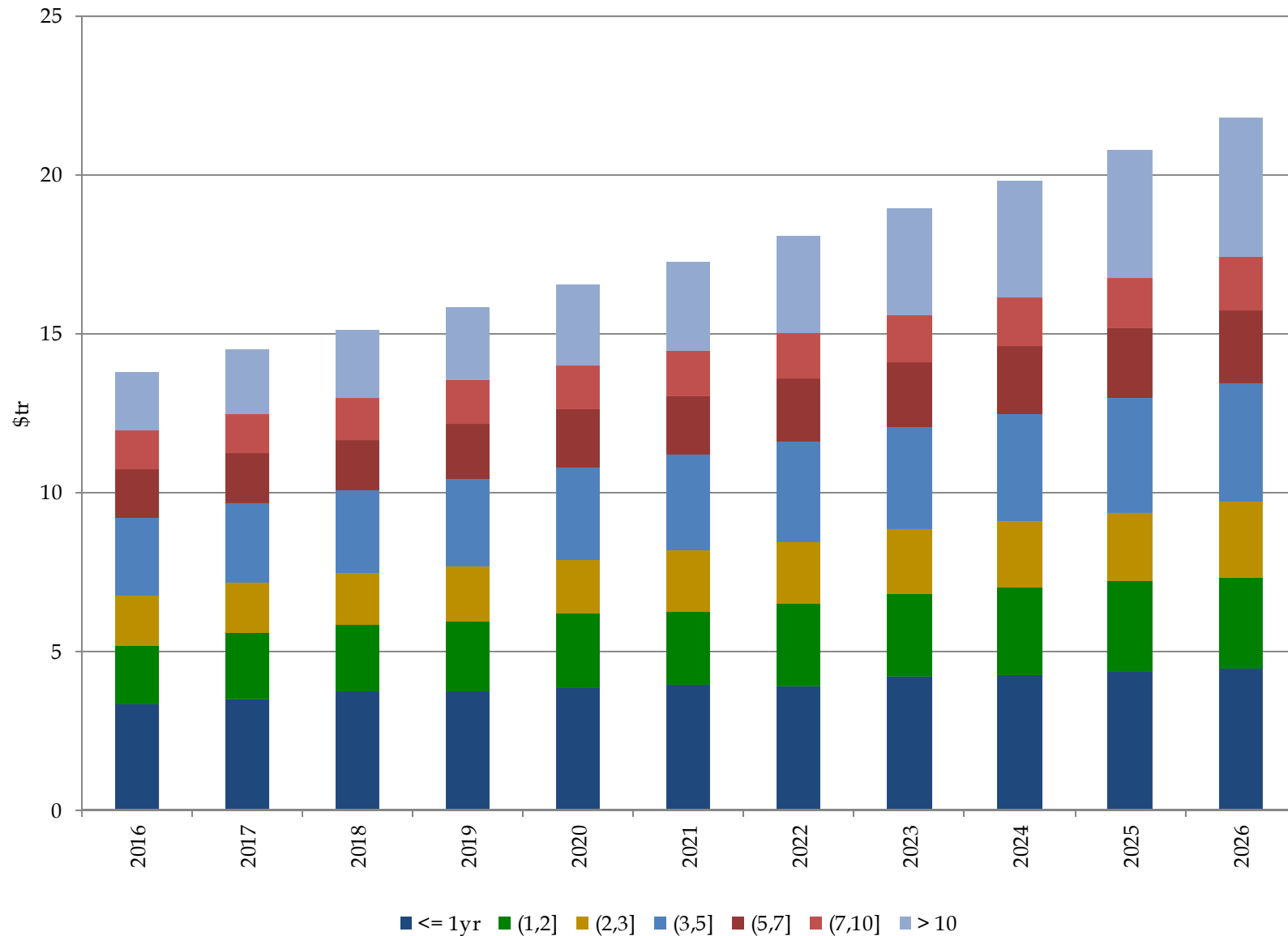
This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury.

## Projected Gross Borrowing excluding Bills for Fiscal Year



This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury.

## Projected Maturity Profile from end of Fiscal Year



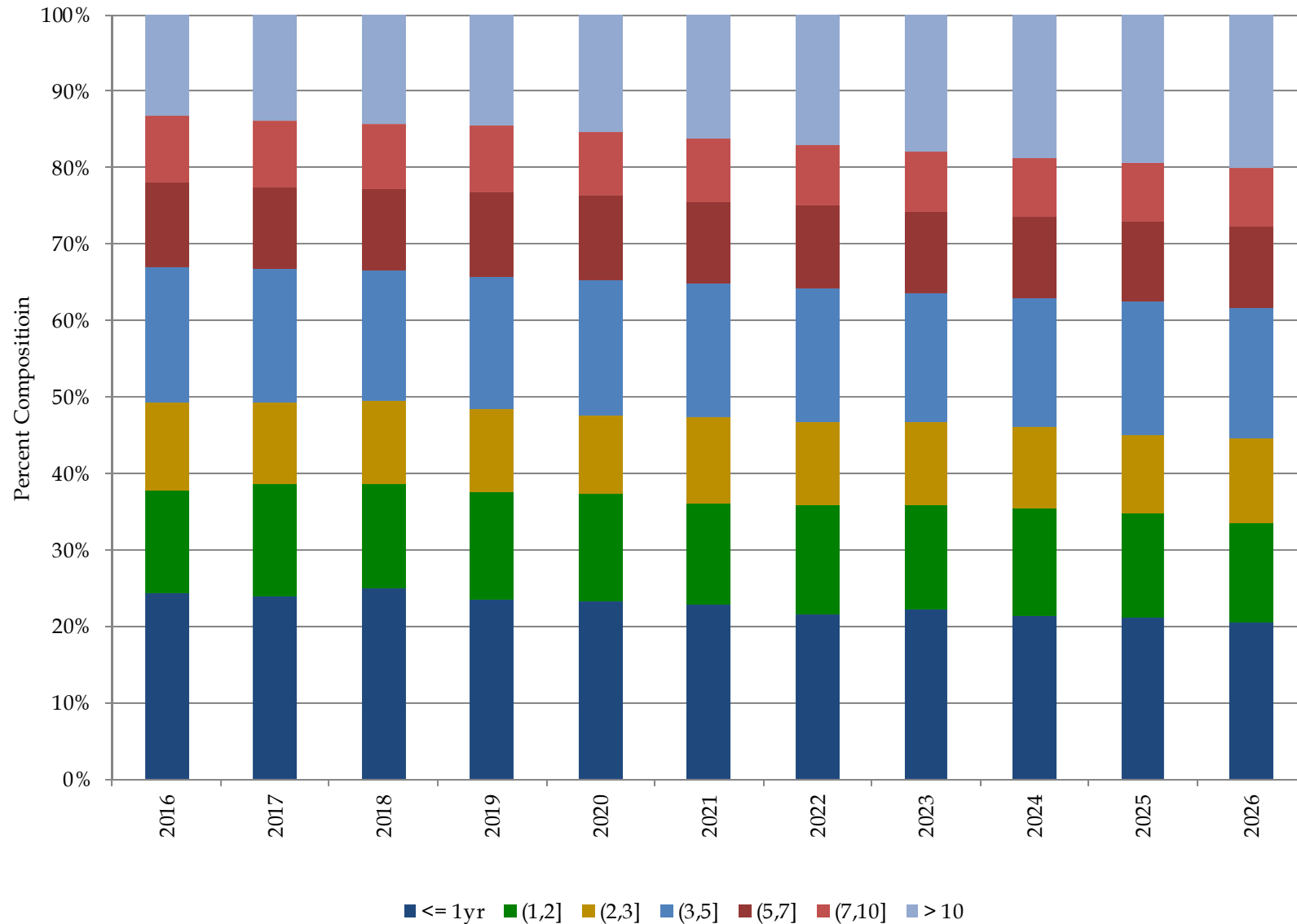
This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury. See table on following page for details.

## Recent and Projected Maturity Profile, \$ billions

End of Fiscal Year	<= 1yr	(1,2]	(2,3]	(3,5]	(5,7]	(7,10]	> 10	Total	(0,5]
2008	2,152	711	280	653	310	499	617	5,222	3,796
2009	2,702	774	663	962	559	643	695	6,998	5,101
2010	2,563	1,141	895	1,273	907	856	853	8,488	5,872
2011	2,620	1,334	980	1,541	1,070	1,053	1,017	9,616	6,476
2012	2,951	1,373	1,104	1,811	1,214	1,108	1,181	10,742	7,239
2013	2,939	1,523	1,242	1,965	1,454	1,136	1,331	11,590	7,669
2014	2,935	1,739	1,319	2,207	1,440	1,113	1,528	12,281	8,199
2015	3,097	1,775	1,335	2,382	1,478	1,121	1,654	12,841	8,589
2016	3,349	1,846	1,585	2,446	1,527	1,194	1,824	13,772	9,227
2017	3,473	2,114	1,556	2,535	1,551	1,261	2,002	14,493	9,678
2018	3,772	2,072	1,628	2,583	1,609	1,312	2,143	15,119	10,056
2019	3,735	2,225	1,719	2,734	1,738	1,381	2,306	15,839	10,413
2020	3,852	2,325	1,688	2,915	1,829	1,388	2,540	16,538	10,781
2021	3,953	2,280	1,941	3,005	1,854	1,439	2,788	17,260	11,179
2022	3,908	2,593	1,948	3,154	1,963	1,448	3,080	18,095	11,603
2023	4,221	2,579	2,070	3,178	2,035	1,484	3,395	18,961	12,047
2024	4,251	2,757	2,104	3,334	2,141	1,525	3,700	19,812	12,445
2025	4,386	2,833	2,131	3,637	2,167	1,571	4,038	20,763	12,987
2026	4,461	2,845	2,395	3,737	2,308	1,660	4,370	21,776	13,438

This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury. Portfolio composition by original issuance type and term can be found in the appendix (Page 43).

## Projected Maturity Profile from end of Fiscal Year



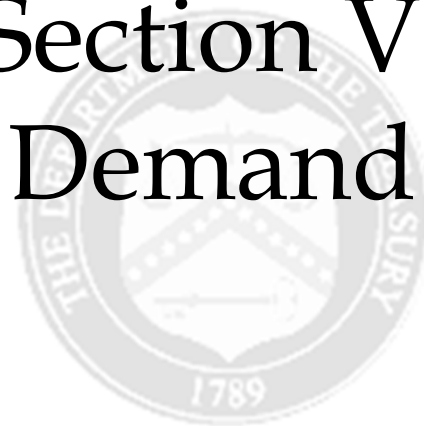
This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury. See table on following page for details.

## Recent and Projected Maturity Profile, percent

End of Fiscal Year	<= 1yr	(1,2]	(2,3]	(3,5]	(5,7]	(7,10]	> 10	(0,3]	(0,5]
2008	41.2	13.6	5.4	12.5	5.9	9.6	11.8	60.2	72.7
2009	38.6	11.1	9.5	13.7	8.0	9.2	9.9	59.1	72.9
2010	30.2	13.4	10.5	15.0	10.7	10.1	10.0	54.2	69.2
2011	27.2	13.9	10.2	16.0	11.1	10.9	10.6	51.3	67.3
2012	27.5	12.8	10.3	16.9	11.3	10.3	11.0	50.5	67.4
2013	25.4	13.1	10.7	17.0	12.5	9.8	11.5	49.2	66.2
2014	23.9	14.2	10.7	18.0	11.7	9.1	12.4	48.8	66.8
2015	24.1	13.8	10.4	18.5	11.5	8.7	12.9	48.3	66.9
2016	24.3	13.4	11.5	17.8	11.1	8.7	13.2	49.2	67.0
2017	24.0	14.6	10.7	17.5	10.7	8.7	13.8	49.3	66.8
2018	25.0	13.7	10.8	17.1	10.6	8.7	14.2	49.4	66.5
2019	23.6	14.0	10.9	17.3	11.0	8.7	14.6	48.5	65.7
2020	23.3	14.1	10.2	17.6	11.1	8.4	15.4	47.6	65.2
2021	22.9	13.2	11.2	17.4	10.7	8.3	16.2	47.4	64.8
2022	21.6	14.3	10.8	17.4	10.8	8.0	17.0	46.7	64.1
2023	22.3	13.6	10.9	16.8	10.7	7.8	17.9	46.8	63.5
2024	21.5	13.9	10.6	16.8	10.8	7.7	18.7	46.0	62.8
2025	21.1	13.6	10.3	17.5	10.4	7.6	19.4	45.0	62.5
2026	20.5	13.1	11.0	17.2	10.6	7.6	20.1	44.6	61.7

This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury. Portfolio composition by original issuance type and term can be found in the appendix (Page 43).

# Section V: Demand



## Summary Statistics for Fiscal Year 2016 Q2 Auctions

Security Type	Term	Stop Out Rate (%)*	Bid-to-Cover Ratio*	Competitive Awards (\$bn)	% Primary Dealer*	% Direct*	% Indirect*	Non-Competitive Awards (\$bn)	SOMA Add Ons (\$bn)	10-Year Equivalent (\$bn)**
Bill	4-Week	0.262	3.4	685.8	59.9	7.3	32.8	3.7	0.0	5.9
Bill	13-Week	0.300	3.4	436.3	60.9	8.9	30.3	4.8	0.0	12.4
Bill	26-Week	0.453	3.7	360.7	50.4	5.6	44.0	4.9	0.0	20.6
Bill	52-Week	0.630	3.5	72.9	66.7	5.4	28.0	0.8	0.0	8.2
Coupon	2-Year	0.830	2.8	77.5	33.6	12.8	53.7	0.5	15.4	20.6
Coupon	3-Year	1.019	2.8	71.8	38.7	11.1	50.2	0.2	1.9	24.6
Coupon	5-Year	1.335	2.4	102.8	33.2	8.6	58.2	0.2	20.1	66.1
Coupon	7-Year	1.646	2.5	84.9	24.8	14.8	60.3	0.1	16.6	74.6
Coupon	10-Year	1.900	2.6	63.9	24.0	12.7	63.3	0.1	1.8	67.0
Coupon	30-Year	2.698	2.2	40.0	30.6	11.0	58.4	0.0	1.2	95.4
TIPS	10-Year	0.552	2.2	26.0	33.1	6.6	60.4	0.0	2.6	30.7
TIPS	30-Year	1.120	2.1	7.0	26.9	2.8	70.3	0.0	2.3	26.2
FRN	2-Year	0.251	3.5	41.0	52.5	5.0	42.5	0.0	0.3	0.0

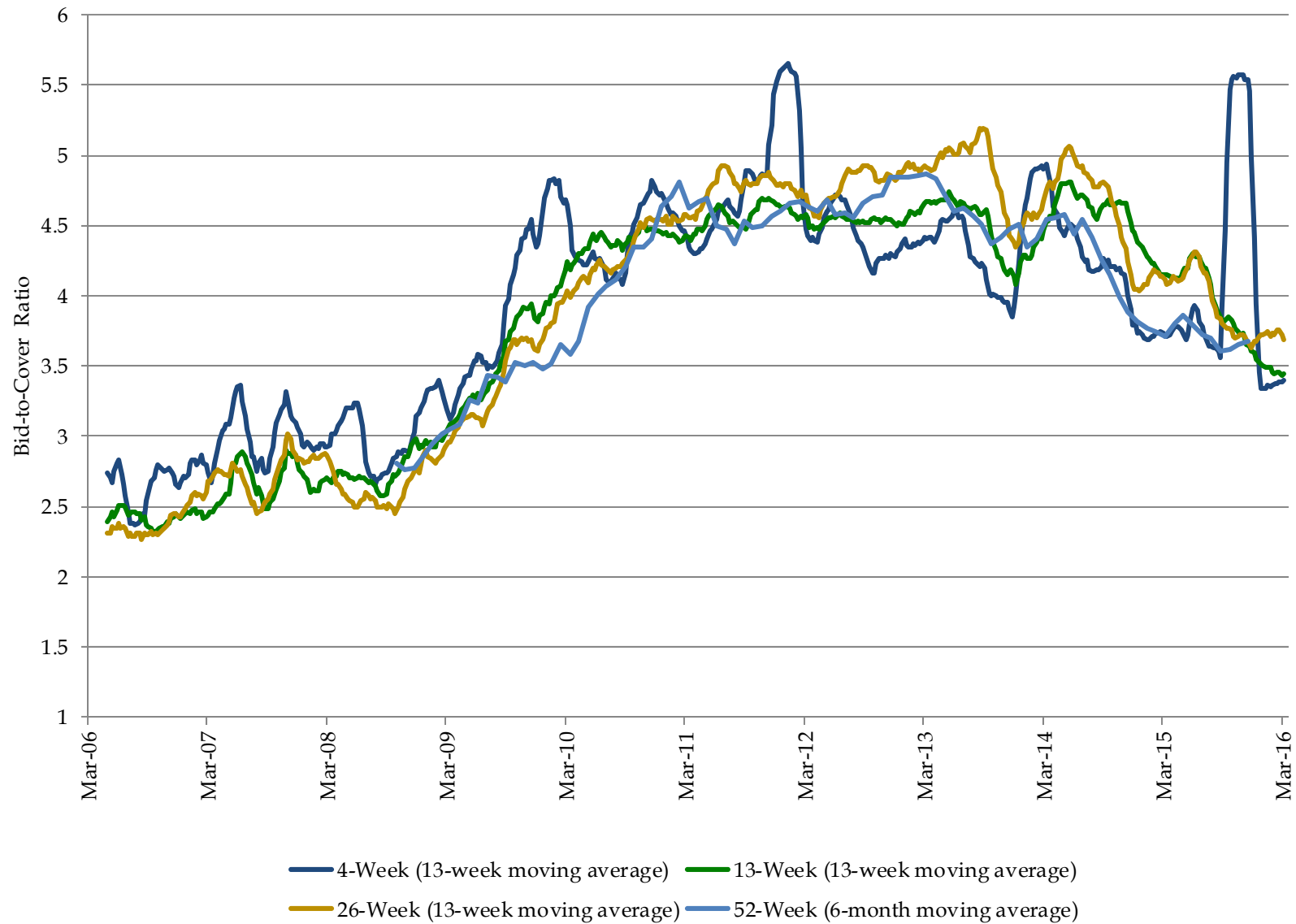
Total Bills	0.334	3.5	1,555.7	58.3	7.3	34.5	14.1	0.0	47.0
Total Coupons	1.460	2.6	441.0	31.0	11.8	57.3	1.0	57.0	348.2
Total TIPS	0.672	2.2	32.9	31.8	5.7	62.5	0.1	5.0	56.9
Total FRNs	0.251	3.5	41.0	52.5	5.0	42.5	0.0	0.3	0.0

\*Weighted averages of Competitive Awards.

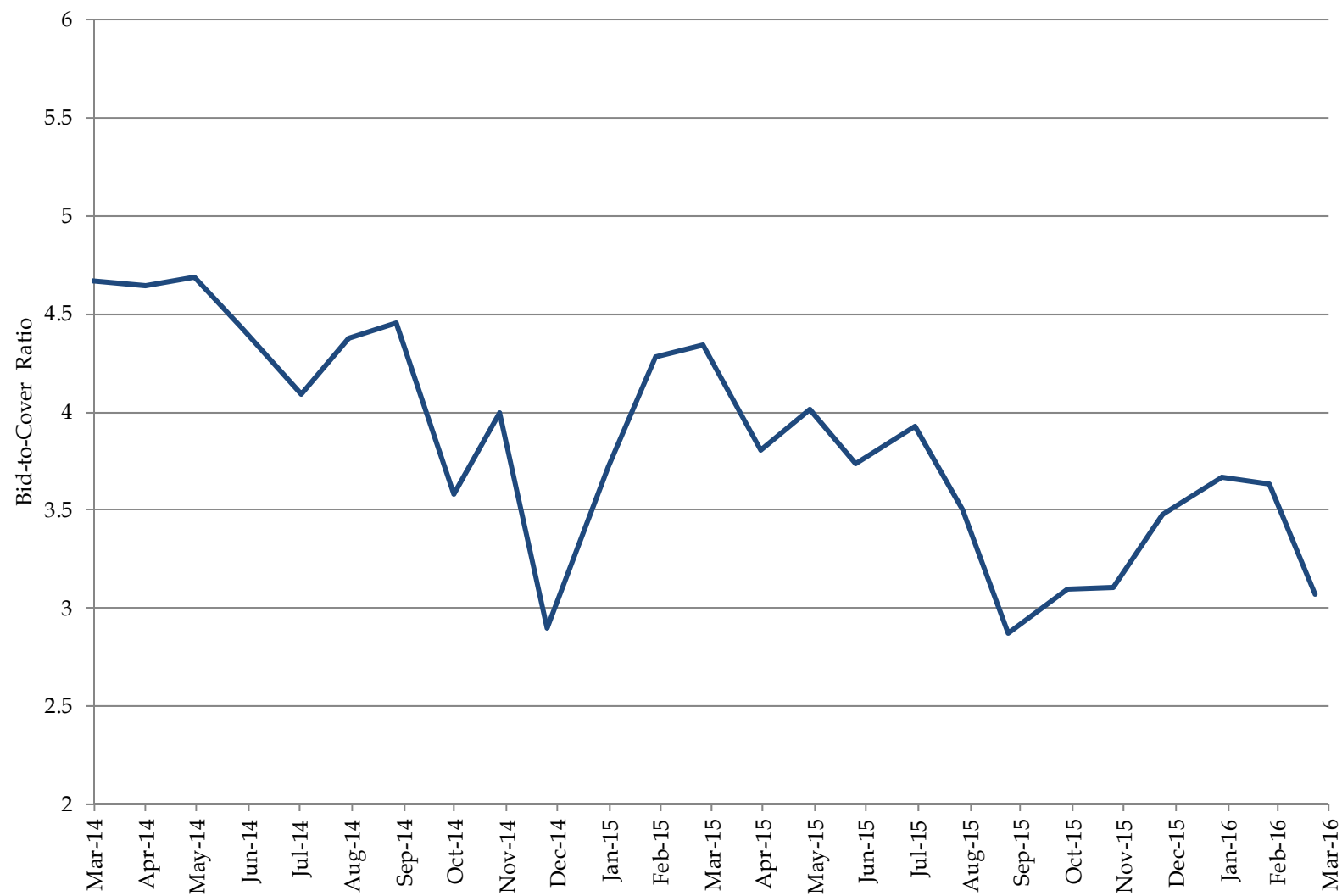
\*\*Approximated using prices at settlement and includes both Competitive and Non-Competitive Awards. For TIPS' 10-year equivalent, a constant auction BEI is used as the inflation assumption.



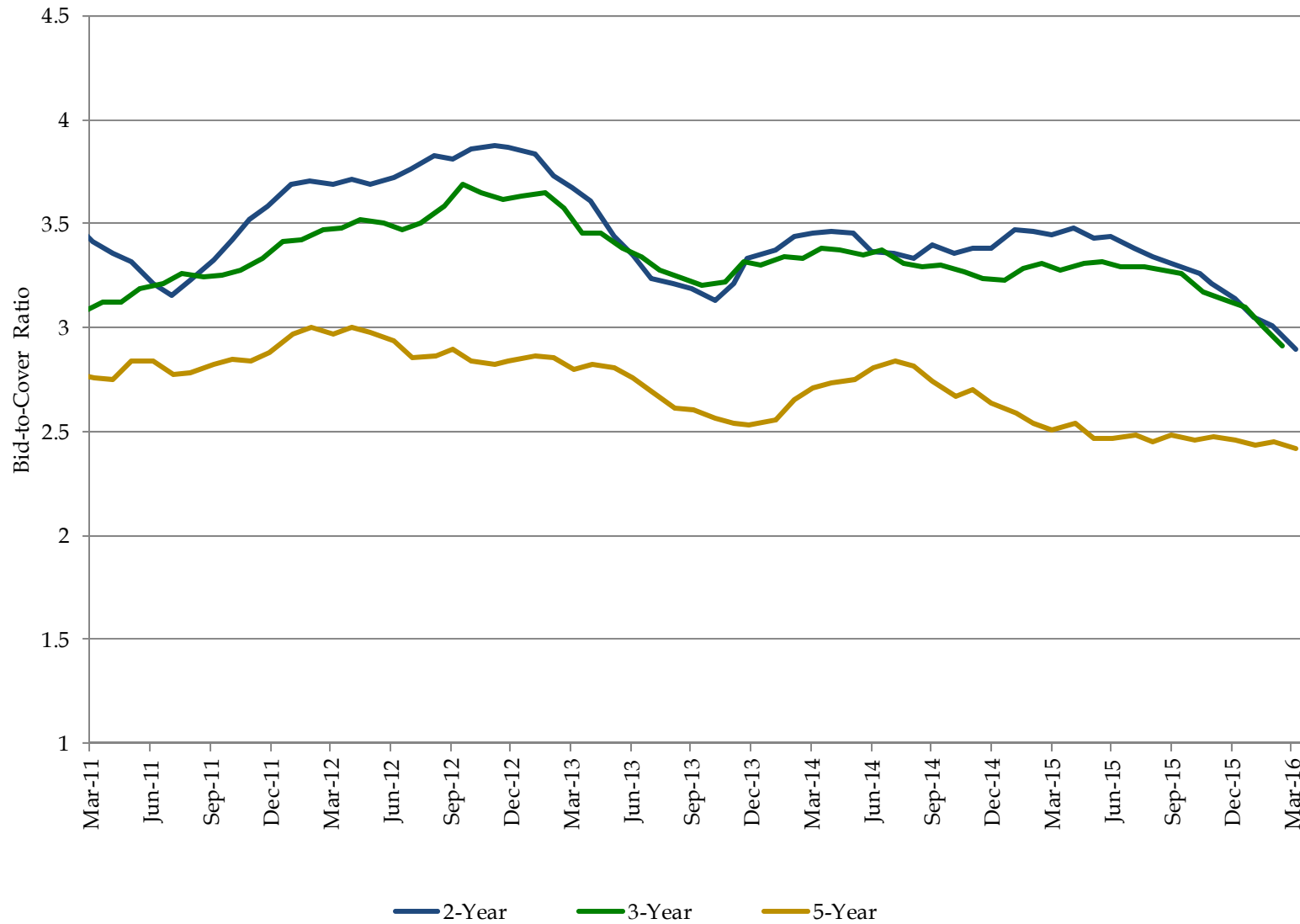
## Bid-to-Cover Ratios for Treasury Bills



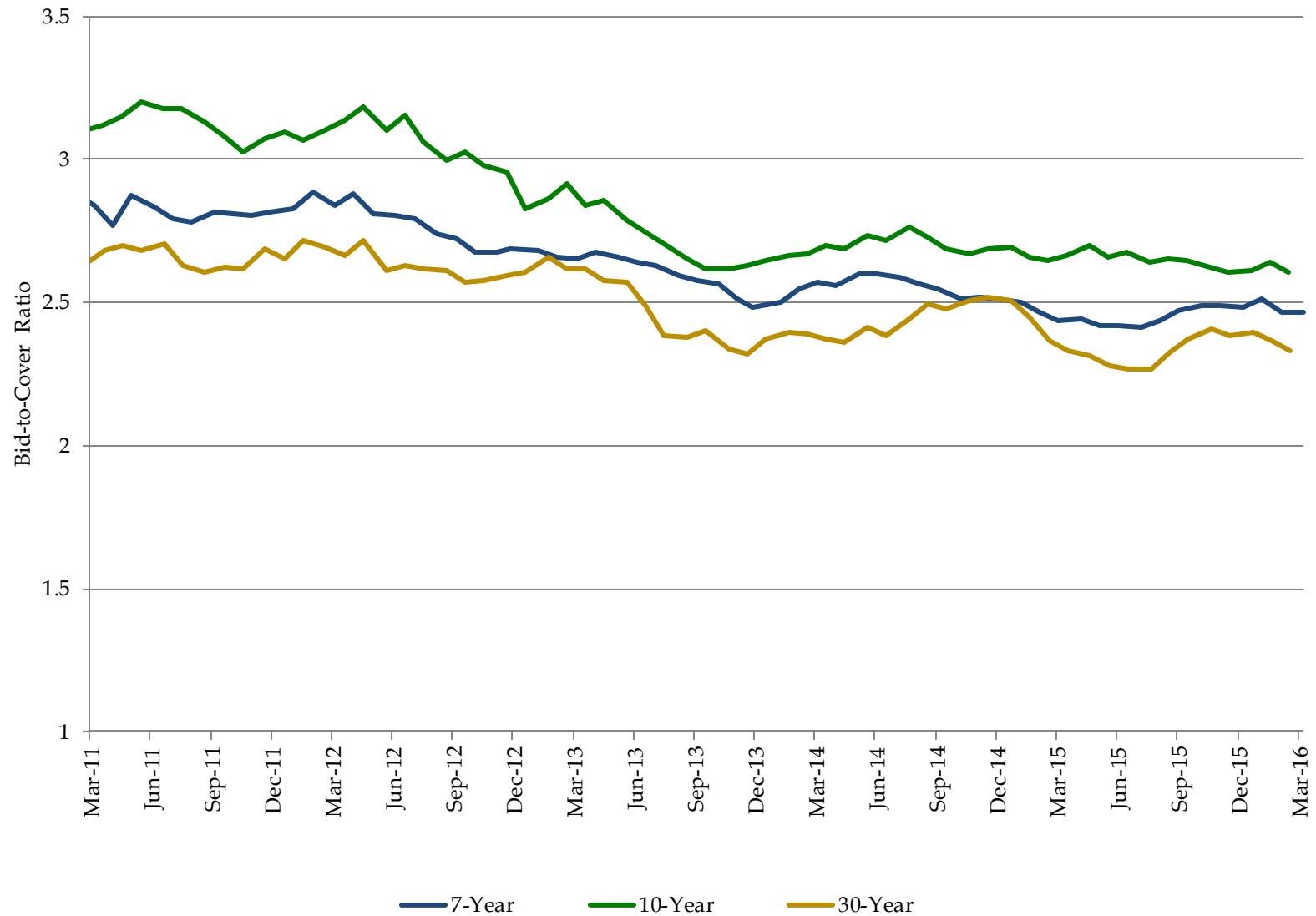
## Bid-to-Cover Ratios for FRNs



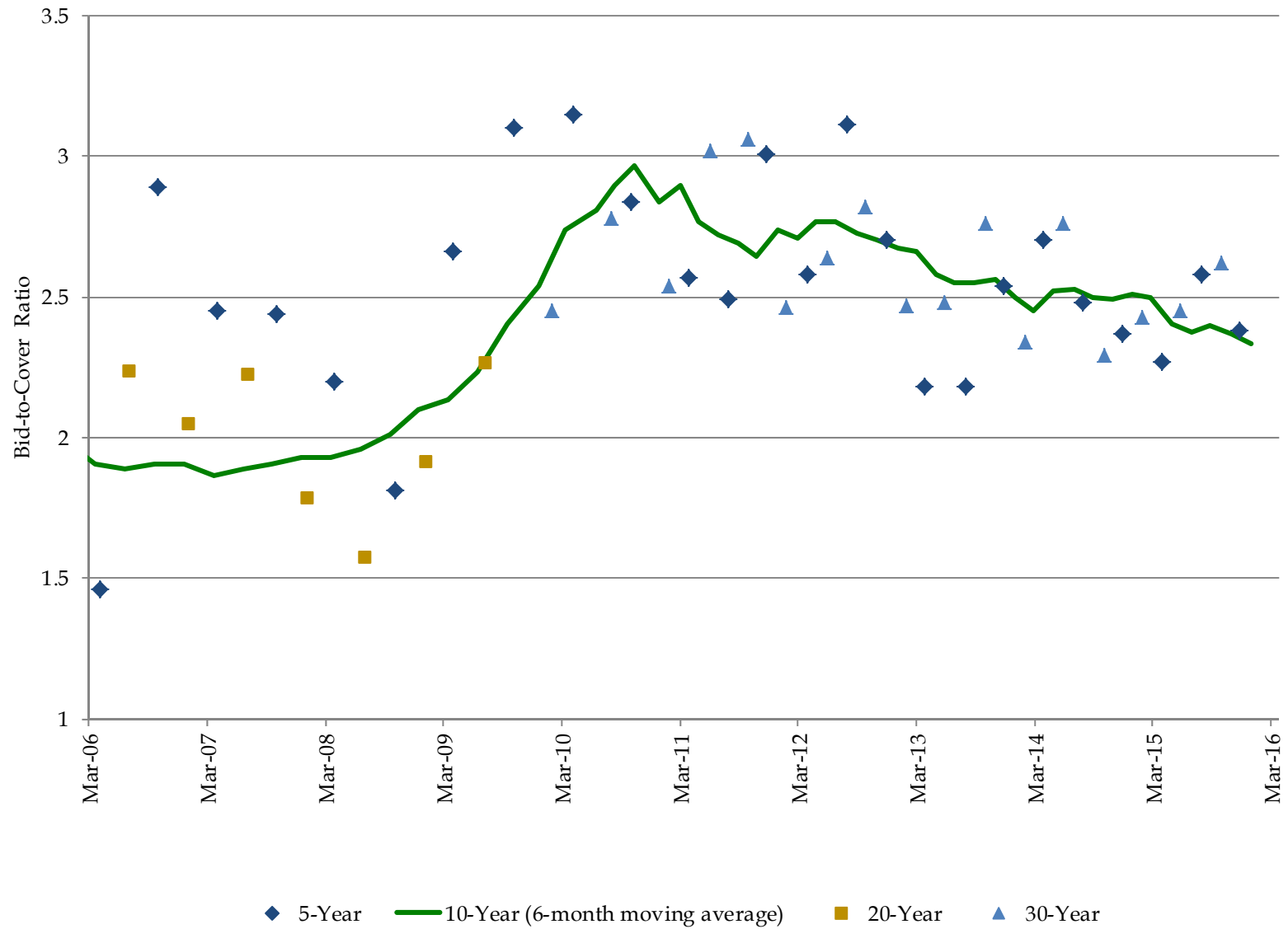
## Bid-to-Cover Ratios for 2-, 3-, and 5-Year Nominal Securities (6-Month Moving Average)



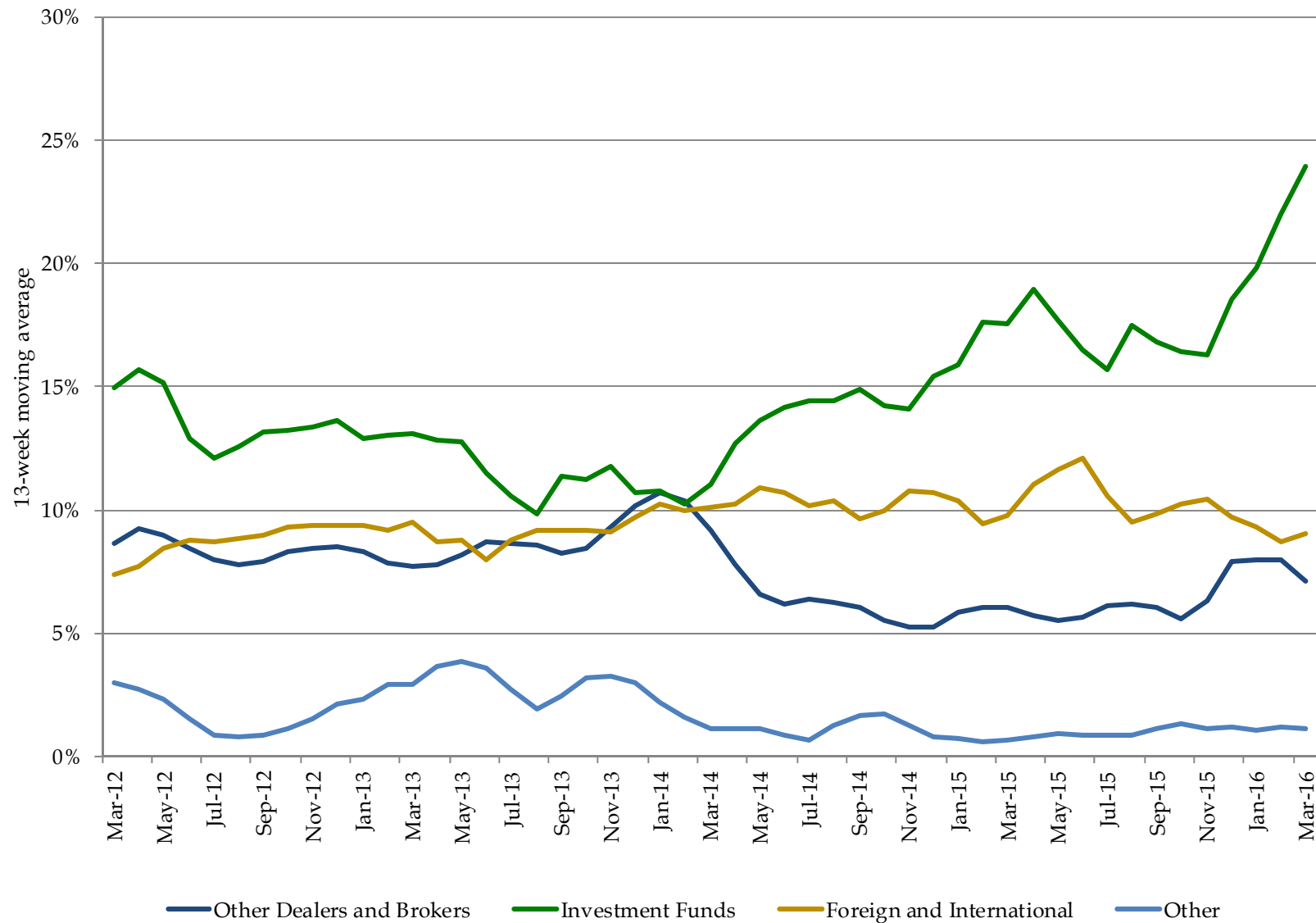
## Bid-to-Cover Ratios for 7-, 10-, and 30-Year Nominal Securities (6-Month Moving Average)



## Bid-to-Cover Ratios for TIPS

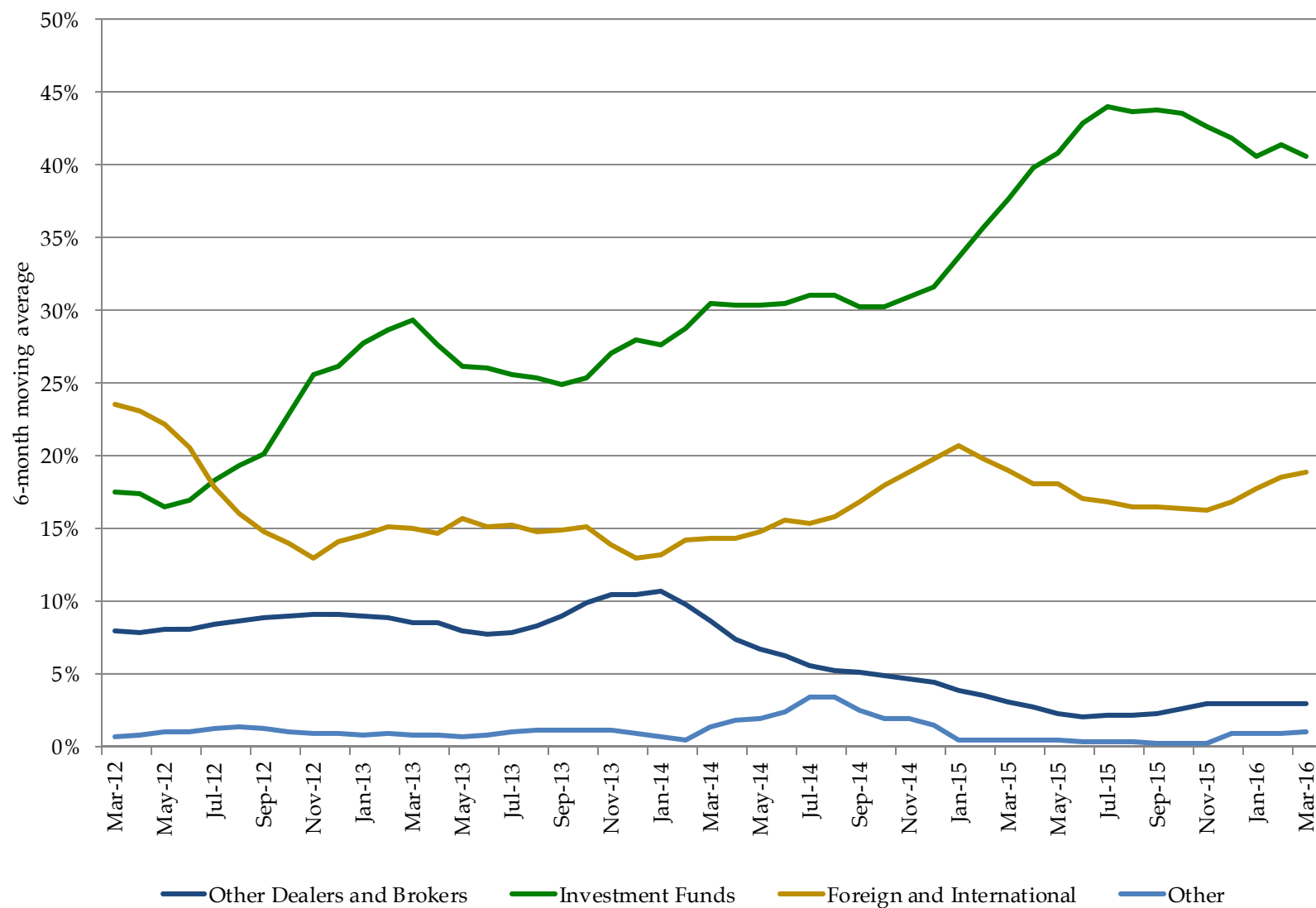


## Percent Awarded in Bill Auctions by Investor Class (13-Week Moving Average)



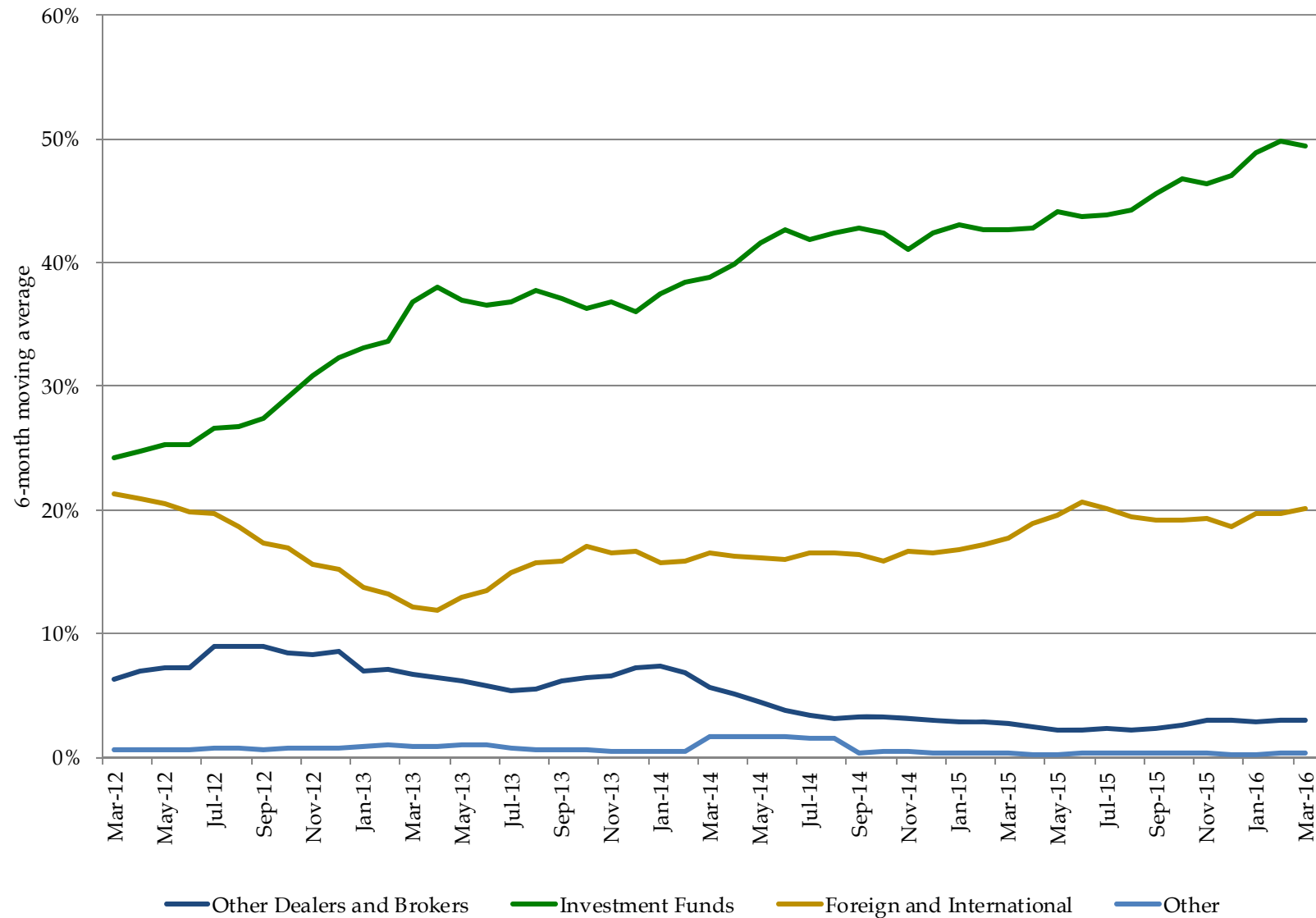
Excludes SOMA add-ons. The "Other" category includes categories that are each less than 2%, which include Depository Institutions, Individuals, Pension and Insurance.

## Percent Awarded in 2-, 3-, and 5-Year Nominal Security Auctions by Investor Class (6-Month Moving Average)



Excludes SOMA add-ons. The "Other" category includes categories that are each less than 2%, which include Depository Institutions, Individuals, Pension and Insurance.

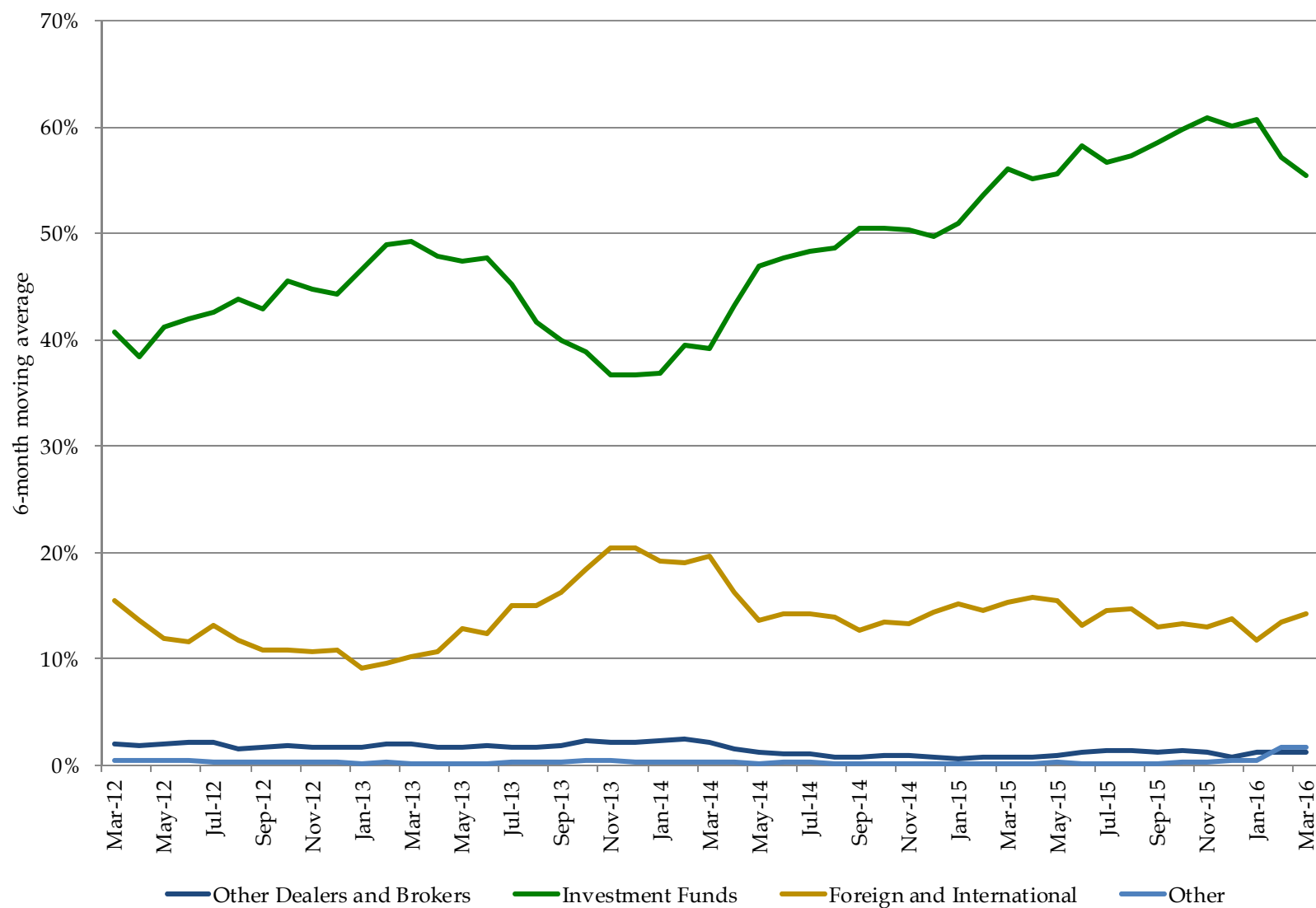
## Percent Awarded in 7-, 10-, 30-Year Nominal Security Auctions by Investor Class (6-Month Moving Average)



Excludes SOMA add-ons. The "Other" category includes categories that are each less than 2%, which include Depository Institutions, Individuals, Pension and Insurance.

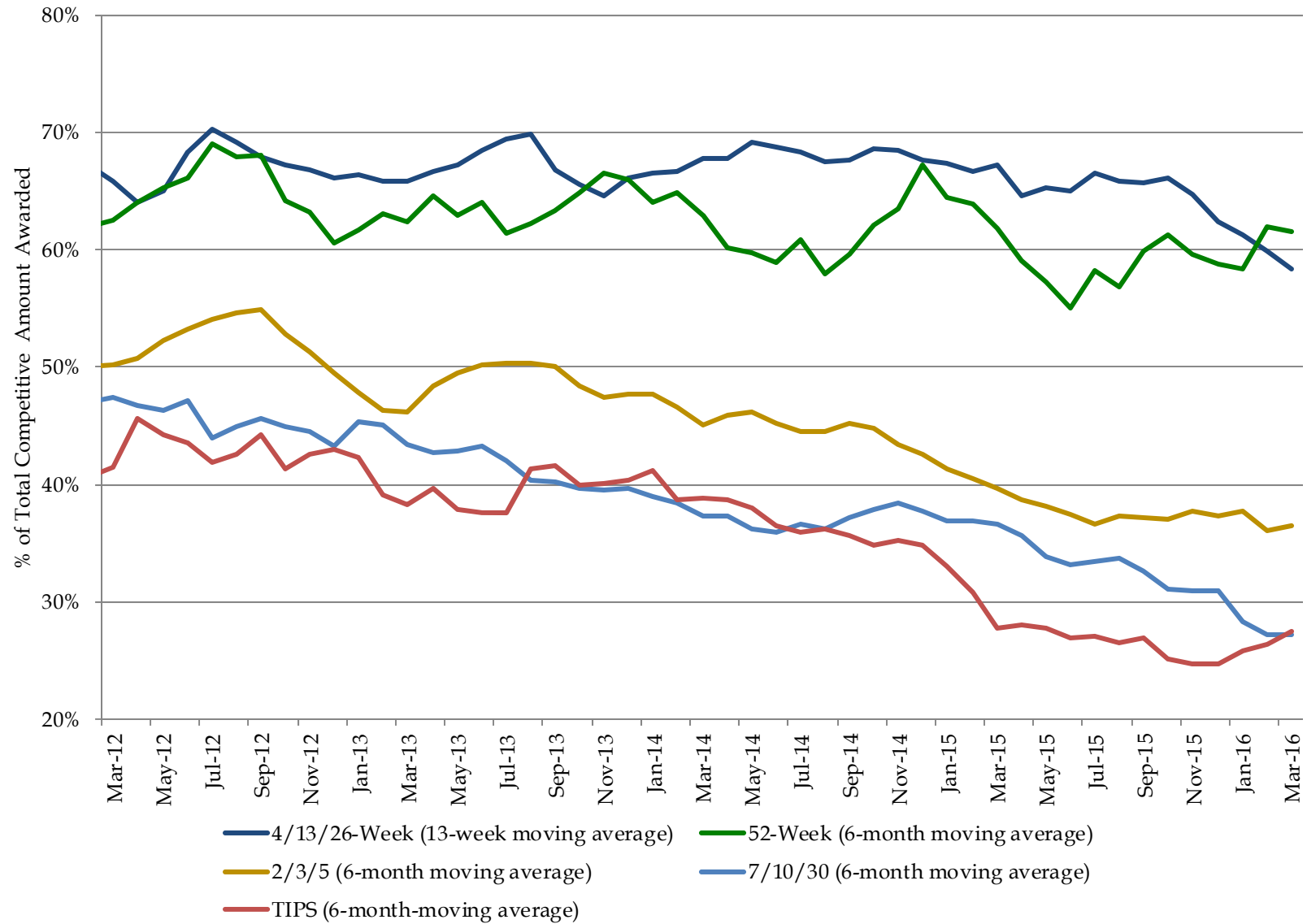


## Percent Awarded in TIPS Auctions by Investor Class (6-Month Moving Average)



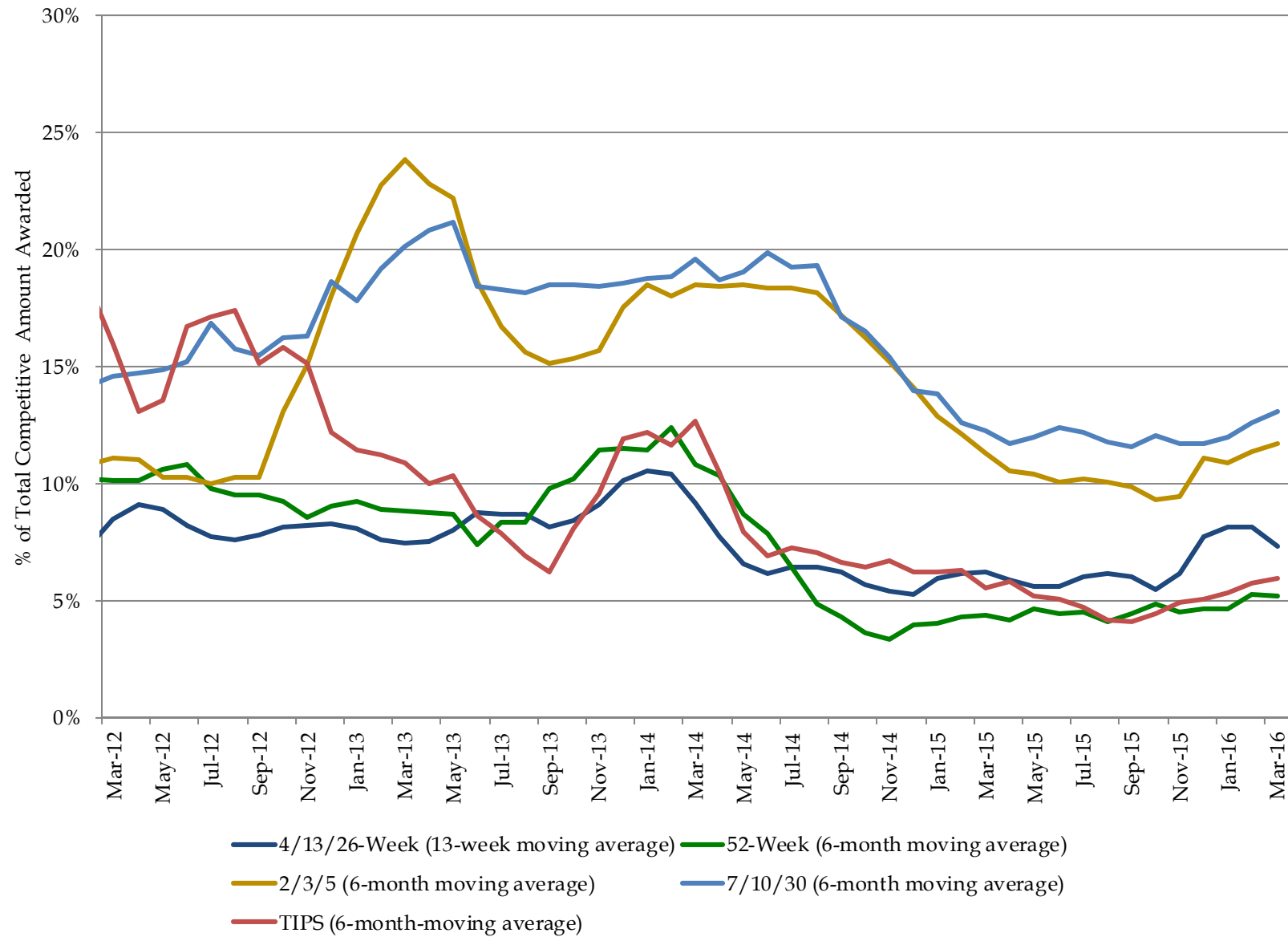
Excludes SOMA add-ons. The "Other" category includes categories that are each less than 2%, which include Depository Institutions, Individuals, Pension and Insurance.

## Primary Dealer Awards at Auction



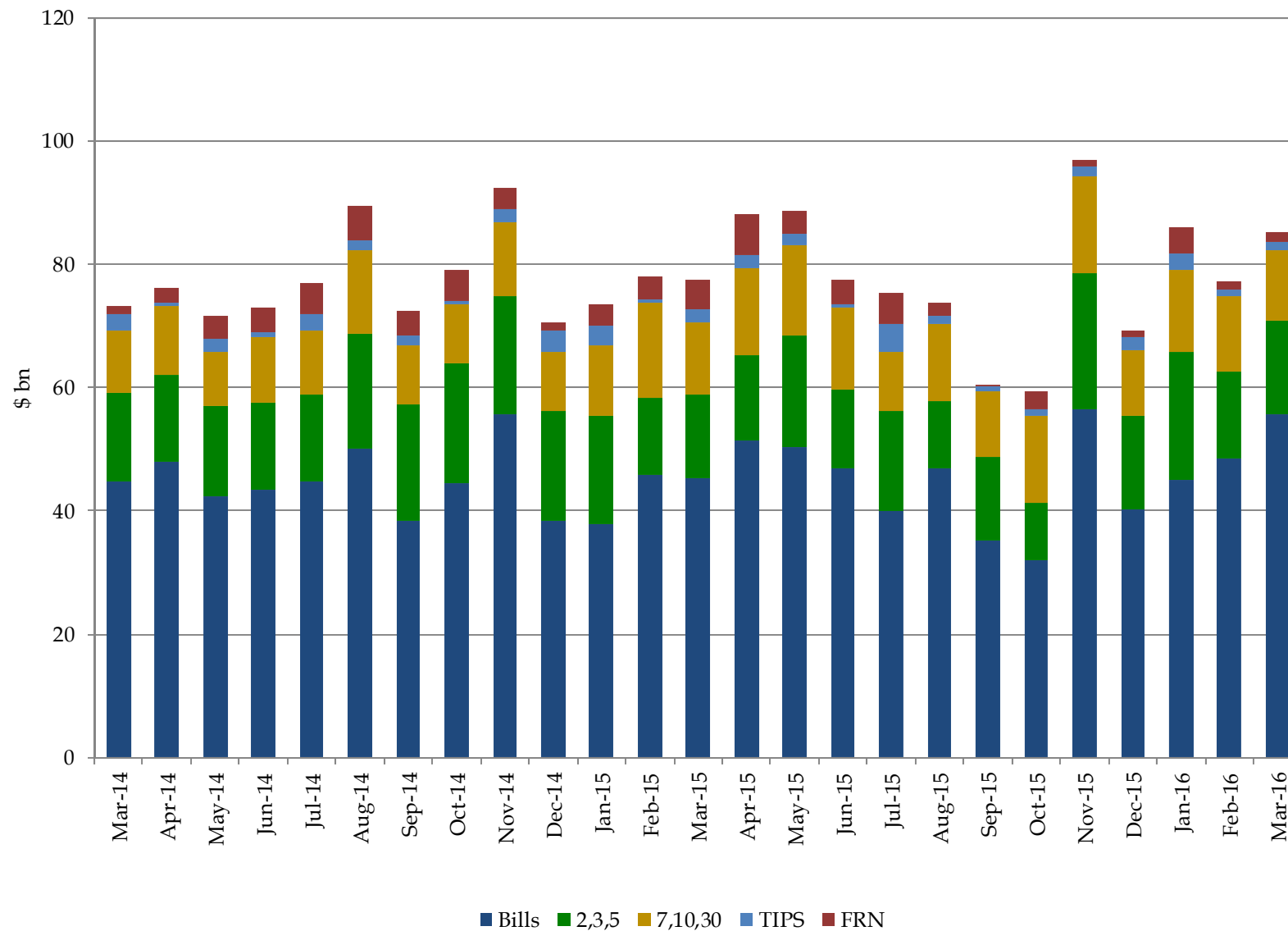
Excludes SOMA add-ons.

## Direct Bidder Awards at Auction



Excludes SOMA add-ons.

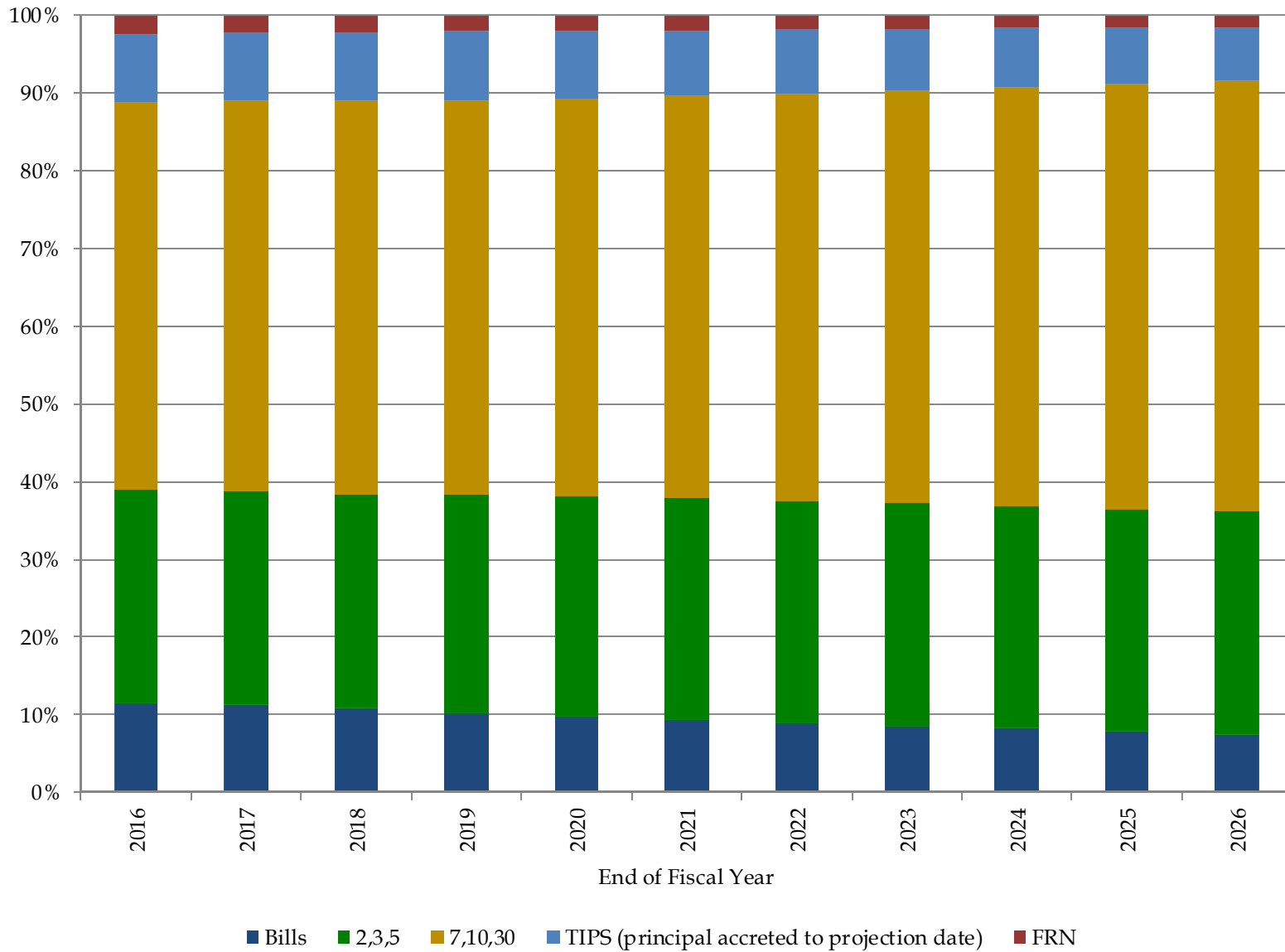
## Total Foreign Awards of Treasuries at Auction, \$ billions



Foreign includes both private sector and official institutions.



## Projected Portfolio Composition by Issuance Type



This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury. See table on following page for details.

## Recent and Projected Portfolio Composition by Issuance Type, Percent

End of Fiscal Year	Bills	2-, 3-, 5-Year Nominal Coupons	7-, 10-, 30-Year Nominal Coupons	Total Nominal Coupons	TIPS (principal accreted to projection date)	FRN
2008	28.5	34.5	26.9	61.4	10.0	0.0
2009	28.5	36.2	27.4	63.6	7.9	0.0
2010	21.1	40.1	31.8	71.9	7.0	0.0
2011	15.4	41.4	35.9	77.3	7.3	0.0
2012	15.0	38.4	39.0	77.4	7.5	0.0
2013	13.2	35.8	43.0	78.7	8.1	0.0
2014	11.5	33.0	46.0	79.0	8.5	1.0
2015	10.6	29.4	49.0	78.3	8.8	2.2
2016	11.4	27.6	49.9	77.5	8.7	2.4
2017	11.2	27.4	50.3	77.8	8.7	2.3
2018	10.7	27.5	50.8	78.3	8.8	2.2
2019	10.3	28.0	50.8	78.9	8.8	2.1
2020	9.8	28.4	51.1	79.5	8.7	2.0
2021	9.4	28.4	51.8	80.2	8.5	1.9
2022	9.0	28.5	52.6	81.0	8.2	1.8
2023	8.6	28.7	53.1	81.8	7.9	1.7
2024	8.2	28.6	53.9	82.5	7.6	1.7
2025	7.8	28.6	54.8	83.4	7.2	1.6
2026	7.5	28.7	55.5	84.2	6.9	1.5

This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury.

Bills										
Issue	Settle Date	Stop Out Rate (%)*	Bid-to-Cover Ratio*	Competitive Awards (\$bn)	% Primary Dealer*	% Direct*	% Indirect*	Non-Competitive Awards (\$bn)	SOMA Add Ons (\$bn)	10-Year Equivalent (\$bn)*
4-Week	1/7/2016	0.200	3.44	44.7	74.4	3.2	22.4	0.3	0.0	0.4
4-Week	1/14/2016	0.220	3.35	44.7	62.9	8.2	28.8	0.3	0.0	0.4
4-Week	1/21/2016	0.250	3.09	49.7	76.1	3.9	20.0	0.3	0.0	0.4
4-Week	1/28/2016	0.295	3.69	54.7	57.4	4.1	38.4	0.3	0.0	0.5
4-Week	2/4/2016	0.270	3.59	54.7	50.0	9.9	40.1	0.3	0.0	0.5
4-Week	2/11/2016	0.265	3.55	54.7	57.3	7.8	34.9	0.3	0.0	0.5
4-Week	2/18/2016	0.270	3.23	54.7	69.5	5.7	24.8	0.3	0.0	0.5
4-Week	2/25/2016	0.285	3.39	54.7	54.5	8.9	36.6	0.3	0.0	0.5
4-Week	3/3/2016	0.295	3.29	54.6	43.7	7.5	48.9	0.3	0.0	0.5
4-Week	3/10/2016	0.275	3.44	59.6	54.9	11.3	33.8	0.3	0.0	0.5
4-Week	3/17/2016	0.280	3.22	59.6	61.9	9.3	28.8	0.3	0.0	0.5
4-Week	3/24/2016	0.270	3.56	54.7	59.0	8.9	32.2	0.2	0.0	0.5
4-Week	3/31/2016	0.200	3.28	44.6	62.0	4.5	33.6	0.3	0.0	0.4
13-Week	1/7/2016	0.215	3.56	27.5	69.6	11.8	18.7	0.4	0.0	0.8
13-Week	1/14/2016	0.215	3.74	27.6	65.1	7.2	27.7	0.4	0.0	0.8
13-Week	1/21/2016	0.255	3.41	30.6	61.4	15.7	22.9	0.4	0.0	0.9
13-Week	1/28/2016	0.305	3.31	32.7	63.8	7.7	28.5	0.3	0.0	1.0
13-Week	2/4/2016	0.350	3.44	36.5	59.3	7.2	33.5	0.4	0.0	1.1
13-Week	2/11/2016	0.315	3.38	36.5	57.5	11.5	31.0	0.4	0.0	1.1
13-Week	2/18/2016	0.300	3.41	36.5	57.4	9.4	33.2	0.4	0.0	1.0
13-Week	2/25/2016	0.320	3.18	35.8	79.4	7.6	13.0	0.3	0.0	1.0
13-Week	3/3/2016	0.325	3.26	36.4	62.8	5.8	31.4	0.3	0.0	1.0
13-Week	3/10/2016	0.315	3.47	36.6	59.7	10.2	30.1	0.3	0.0	1.0
13-Week	3/17/2016	0.335	3.47	36.4	54.6	3.7	41.7	0.4	0.0	1.0
13-Week	3/24/2016	0.300	3.41	33.5	51.2	10.9	37.9	0.3	0.0	0.9
13-Week	3/31/2016	0.300	3.81	29.8	50.5	7.9	41.6	0.3	0.0	0.9
26-Week	1/7/2016	0.500	3.96	25.5	50.4	6.8	42.8	0.3	0.0	1.5
26-Week	1/14/2016	0.470	4.19	25.4	48.0	8.7	43.3	0.5	0.0	1.5
26-Week	1/21/2016	0.370	3.67	25.3	75.5	4.7	19.7	0.5	0.0	1.5
26-Week	1/28/2016	0.415	3.39	26.7	61.8	5.9	32.3	0.4	0.0	1.6
26-Week	2/4/2016	0.465	3.86	29.3	44.6	5.8	49.6	0.4	0.0	1.7
26-Week	2/11/2016	0.420	3.86	29.3	37.4	7.5	55.1	0.4	0.0	1.7
26-Week	2/18/2016	0.410	3.43	29.4	59.0	6.1	34.9	0.4	0.0	1.6
26-Week	2/25/2016	0.455	3.83	28.7	36.2	3.9	59.9	0.4	0.0	1.6
26-Week	3/3/2016	0.480	3.46	29.6	48.4	4.2	47.4	0.3	0.0	1.6
26-Week	3/10/2016	0.475	3.84	29.6	42.2	4.7	53.1	0.3	0.0	1.6
26-Week	3/17/2016	0.510	3.61	29.6	56.2	2.2	41.5	0.3	0.0	1.6
26-Week	3/24/2016	0.440	3.19	27.5	60.8	7.6	31.6	0.3	0.0	1.5
26-Week	3/31/2016	0.475	3.58	24.9	37.1	5.5	57.5	0.3	0.0	1.4
52-Week	1/7/2016	0.670	3.95	15.9	68.6	4.4	27.0	0.1	0.0	1.8
52-Week	2/4/2016	0.530	3.59	17.8	68.8	5.5	25.7	0.2	0.0	2.0
52-Week	3/3/2016	0.660	3.29	19.8	67.8	5.5	26.6	0.2	0.0	2.2

\*Weighted averages of Competitive Awards.

\*\*Approximated using prices at settlement and includes both Competitive and Non-Competitive Awards.



Nominal Coupons										
Issue	Settle Date	Stop Out Rate (%)*	Bid-to-Cover Ratio*	Competitive Awards (\$bn)	% Primary Dealer*	% Direct*	% Indirect*	Non-Competitive Awards (\$bn)	SOMA Add Ons (\$bn)	10-Year Equivalent (\$bn)*
2-Year	2/1/2016	0.860	2.90	25.8	29.8	12.3	57.9	0.2	0.5	6.0
2-Year	2/29/2016	0.752	2.91	25.8	33.4	10.8	55.8	0.2	8.7	7.5
2-Year	3/31/2016	0.877	2.58	25.8	37.4	15.2	47.4	0.2	6.2	7.0
3-Year	1/15/2016	1.174	2.94	24.0	27.8	9.4	62.8	0.0	0.0	8.1
3-Year	2/16/2016	0.844	2.74	23.9	43.5	15.0	41.5	0.1	1.9	8.8
3-Year	3/15/2016	1.039	2.71	23.9	44.7	9.1	46.2	0.1	0.0	7.8
5-Year	2/1/2016	1.496	2.44	34.9	37.8	8.6	53.5	0.1	0.6	19.6
5-Year	2/29/2016	1.169	2.44	33.9	22.7	10.0	67.3	0.1	11.4	24.1
5-Year	3/31/2016	1.335	2.38	33.9	38.9	7.2	53.9	0.1	8.1	22.4
7-Year	2/1/2016	1.759	2.63	29.0	15.8	14.8	69.4	0.0	0.5	22.2
7-Year	2/29/2016	1.568	2.25	28.0	32.3	14.2	53.5	0.0	9.4	27.1
7-Year	3/31/2016	1.606	2.51	28.0	26.7	15.5	57.8	0.0	6.7	25.3
10-Year	1/15/2016	2.090	2.77	21.0	17.7	11.3	71.0	0.0	0.0	21.0
10-Year	2/16/2016	1.730	2.56	23.0	22.4	15.3	62.3	0.0	1.8	26.1
10-Year	3/15/2016	1.895	2.49	20.0	32.4	11.1	56.5	0.0	0.0	20.0
30-Year	1/15/2016	2.905	2.29	13.0	32.6	10.8	56.5	0.0	0.0	29.1
30-Year	2/16/2016	2.500	2.09	15.0	31.7	10.3	58.0	0.0	1.2	38.9
30-Year	3/15/2016	2.720	2.33	12.0	27.0	12.0	60.9	0.0	0.0	27.3
2-Year FRN	2/1/2016	0.272	3.67	15.0	42.7	2.2	55.2	0.0	0.3	0.0
2-Year FRN	2/26/2016	0.237	3.63	13.0	60.8	10.0	29.2	0.0	0.0	0.0
2-Year FRN	3/28/2016	0.240	3.07	13.0	55.6	3.2	41.2	0.0	0.0	0.0

TIPS										
Issue	Settle Date	Stop Out Rate (%)*	Bid-to-Cover Ratio*	Competitive Awards (\$bn)	% Primary Dealer*	% Direct*	% Indirect*	Non-Competitive Awards (\$bn)	SOMA Add Ons (\$bn)	10-Year Equivalent (\$bn)*
10-Year TIPS	1/29/2016	0.725	2.19	15.0	33.5	9.9	56.6	0.0	0.0	16.5
10-Year TIPS	3/31/2016	0.315	2.25	11.0	32.4	2.0	65.5	0.0	2.6	14.2
30-Year TIPS	2/29/2016	1.120	2.11	7.0	26.9	2.8	70.3	0.0	2.3	26.2

\*Weighted averages of Competitive Awards.

\*\*Approximated using prices at settlement and includes both Competitive and Non-Competitive Awards. For TIPS' 10-Year Equivalent, a constant auction BEI is used as the inflation assumption.

# Treasury Borrowing Advisory Committee Presentation

***To what extent has fixed income dynamics in overseas markets affected demand for US Treasuries? Please also assess the challenges faced by the major global sovereign borrowers over the medium term. How are these challenges similar to or different from the case of the United States?***

# Agenda

---

- I: Economic outlook of major economies outside the US, and recent policy action
    - Record low yields outside US, and a collapse in term premia in core bond markets
  - II: Impact on the US Treasury market
    - Sharp change in the demand base, from official to private
    - Treasury demand has stayed strong; some challenges on the liquidity front
  - III: Impact on other sovereign debt issuers
    - Opportunity to term out issuance
  - IV: Medium-term challenges
    - Interest costs will become a larger part of the conversation
    - Limited flexibility to handle next economic downturn
    - Fed unwind of QE could pose a challenge
    - Change in demand base to more price-sensitive buyers
-

---

I: Recent fiscal/policy actions in other major economies

---

# Experience with negative interest rates

Central Bank	Action	Reason
Denmark	<p>July 2012 to April 2014: Certificates of deposit rate lowered to -0.2%; raised to -0.1% in January 2013, and back to positive in April 2014;</p> <p>September 2014 onward: Cut the certificates of deposit rate to -0.75% in a series of steps. Current account cap raised from DKK37 billion to DKK 173 billion.</p>	<p>To discourage capital flows placing upward pressure on the krone.</p> <p>To manage upward pressure on the krone. Current account cap raised to reduce costs to the banking sector of the negative deposit rate</p>
Euro area	June 2014 onward: Lowered the Deposit Facility Rate (DFR) to -0.1% in June 2014, -0.2% in September 2014, -0.3% in December 2015 and -0.4% in March 2016.	Subdued growth and weak inflation outlook (successively revised downward)
Sweden	<p>July 2009 to September 2010: Cut deposit rate to -0.25%.</p> <p>July 2014 onward: Deposit rate lowered into negative territory (-0.5%). Beginning in February 2015, the repo rate became negative (-0.1%) and was subsequently lowered to -0.35%, bringing the deposit rate to -1.10%.</p>	<p>Deep recession</p> <p>Persistently below target inflation.</p>
Switzerland	<p>1972: Penalty charge of 2% per quarter applied to the increase in CHF deposits from non-residents. Increased to 3% in November 1973 and 105 in February 1978.</p> <p>December 2014 onward: Target range for the 3-month Libor lowered to -1.25% to -0.5% in two steps. Rate on sight deposits at the SNB lowered to -0.75%.</p>	<p>To discourage capital flows , particularly from oil-exporting countries.</p> <p>To manage upward pressure on the franc, weak growth and concerns over deflation.</p>
Japan	January 2016 onward: The BoJ adopted a three-tier system in which the outstanding balance of each financial institution's current account at the Bank will be divided into three tiers, to each of which a positive interest rate, a zero interest rate or a negative interest rate are applied, respectively	To achieve the price stability target of 2 percent at the earliest possible time

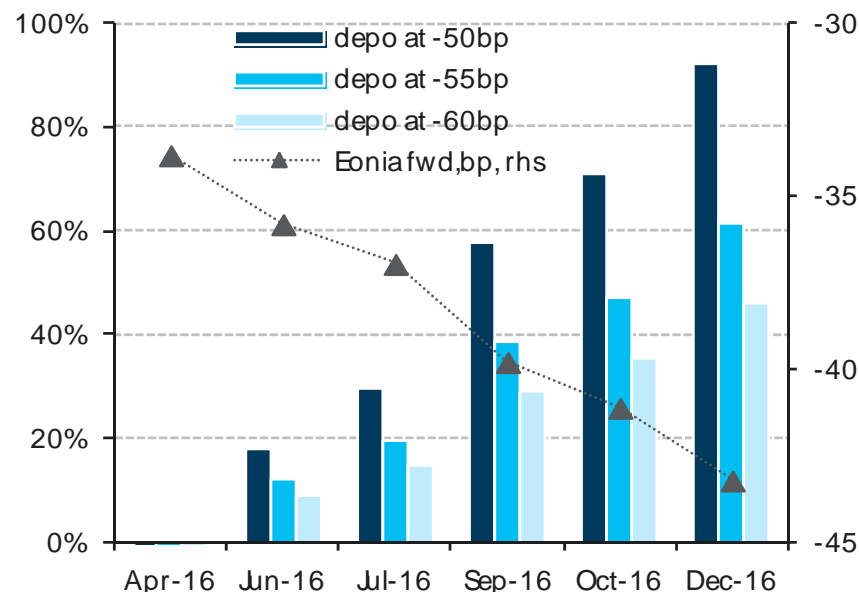
# Growth and inflation forecasts have been revised lower

Further downward revisions to our global growth and inflation outlook since November													
	Real GDP (% change)										Inflation (% annual change)		
	Barclays								vs. Nov. GO	vs. Consen	Barclays		
	Q3 15	Q4 15	Q1 16	Q2 16	Q3 16	2015	2016	2017	2016	2016	2015	2016	2017
Global	3.2	2.7	2.5	3.4	3.7	3.2	3.1	3.7	-0.3	-0.1	2.0	2.7	3.0
United States	2.0	1.4	0.5	2.0	2.5	2.4	1.7	2.4	-0.8	-0.3	0.1	1.5	2.6
Japan	1.4	-1.1	-0.1	1.0	1.6	0.5	0.4	1.0	-0.7	-0.2	0.5	-0.2	1.6
Uniited Kindom	1.8	2.4	1.0	0.0	2.5	2.3	1.5	1.9	-0.4	-0.5	0.0	0.7	1.6
Euro area	1.2	1.3	1.4	1.5	1.7	1.5	1.4	1.7	-0.2	-0.1	0.0	0.1	1.0
Advanced	1.7	1.1	0.8	1.6	2.1	1.9	1.5	2.0	-0.5	-0.3	0.2	0.8	1.9
Emerging	4.4	3.9	3.7	4.8	4.9	4.2	4.3	4.9	-0.1	0.1	4.9	5.4	4.6
Brazil	-6.7	-5.8	-2.4	-1.2	0.4	-3.8	-3.1	0.6	-1.4	0.0	9.0	8.7	6.4
Mexico	3.3	2.2	2.8	0.8	1.6	2.5	2.2	2.7	-0.3	-0.5	2.7	2.7	2.9
China	6.9	6.5	6.3	6.5	5.9	6.9	6.4	5.8	0.4	0.0	1.4	2.2	1.8
India	8.1	4.4	6.6	10.4	8.9	7.3	7.6	8.0	-0.4	0.0	4.9	4.8	5.1
South Korea	5.0	2.7	2.0	2.0	2.7	2.6	2.5	2.4	-0.5	-0.2	0.7	1.3	1.8
Indonesia	4.2	7.3	4.5	5.3	4.9	4.8	5.4	6.0	0.0	0.4	6.4	4.2	4.7
Poland	2.7	4.2	3.6	2.5	3.7	3.4	3.6	4.1	0.2	0.0	-0.8	-0.6	0.4
Russia	-2.3	-3.0	-0.2	0.0	1.4	-3.7	-1.0	1.5	-1.0	0.3	15.5	8.4	6.8
Turkey	3.1	6.8	0.0	3.4	3.5	4.0	3.3	3.6	0.4	0.0	7.7	8.2	8.0
South Africa	0.7	0.6	0.6	0.6	0.9	1.3	0.6	1.4	-1.2	-0.3	4.6	6.8	6.1

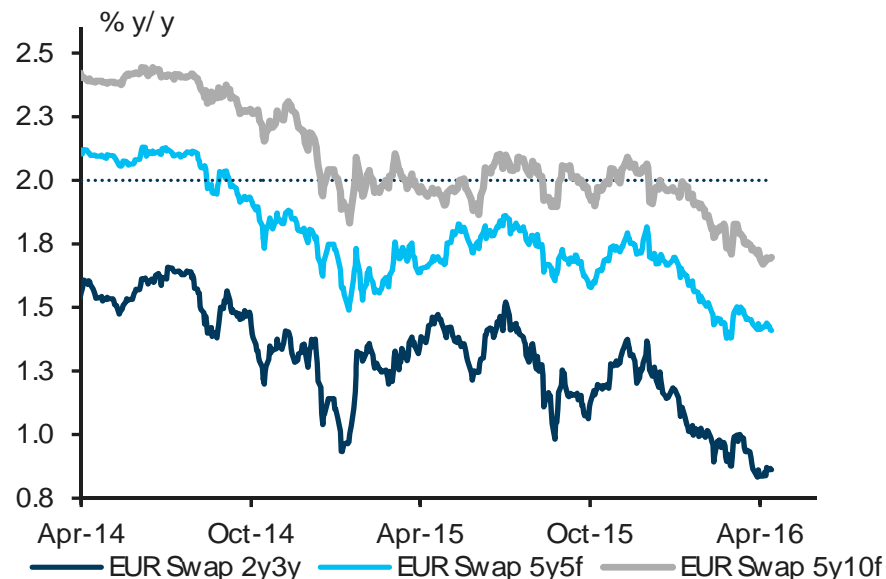
# ECB: more QE/CE and fewer rate cuts

- With inflation well below target, inflation expectations (nearly) at historical lows, credit dynamics subdued, and recent euro strength, the ECB surprised with a broad package at the March meeting:
  - **More QE:** Additional EUR20bn purchases, bringing monthly APP purchases to EUR80bn
  - **More CE:** Added corporate debt to APP + new 4year TLTRO II programme (as low as -40bp if banks meet some lending thresholds; if not, there is no mandatory early repayment)
  - **A moderate rate cut:** Cut the depo rate to -0.40%, the refi rate to 0%, and the MLF to +0.25%.
  - **ECB signalled limited-scope for more depo cuts** (on financial stability concerns).
  - **Reinforced forward guidance:** low rates to remain well below the end of the APP (March 2017).

## ECB-dated EONIA forwards signal that another 10bp depo rate cut could come before year end



## Expectations still signal weak medium-term inflation dynamics

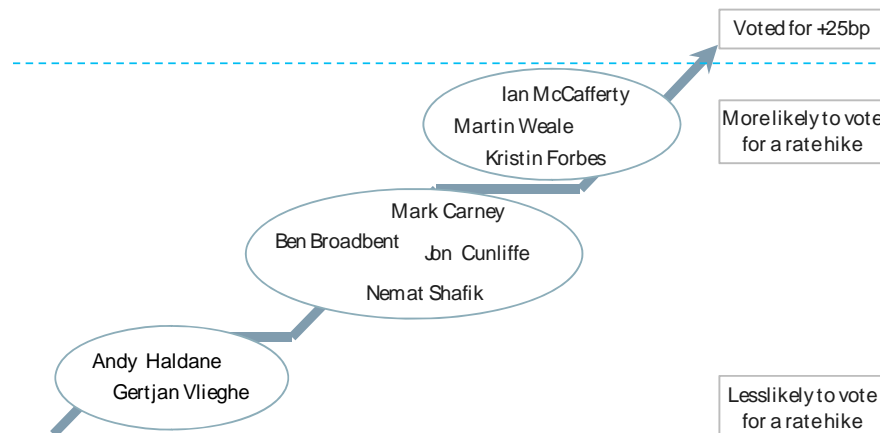


# BoE Monetary policy: Further down the river she sails

## A hike in the Bank Rate appears off the table in the short-term

- In March 2016, we pushed back our call for a rate hike from Q4 16 to Q2 17 due to our view that the domestic economy is slowing, only magnified by EU referendum uncertainties, the ongoing absence of significant domestic inflationary pressures and an uncertain global economy and jittery financial markets.
- Our call is predicated on three key assumptions:
  1. the UK remains a member of the EU following the 23 June referendum;
  2. post-referendum, we see a pick-up in investment and private consumption; and
  3. nominal wage pressures build up over 2016, reaching approximately 3% 3m/y by the turn of the year.
- We continue to expect a hike every six months, allowing the Committee to gather sufficient information and reassess its stance between hikes, but acknowledge risks of a wider period between hikes. Given the very cautious narrative from central banks regarding uncertain global economic and financial conditions, we acknowledge the risk that the Committee may leave more than six months between hikes.

### Dove-Hawk meter (as at April 2016 meeting)





# Japan: Monetary and fiscal policy initiatives since 2015

## Monetary policy measures since 2015

Dec-15	<p>BoJ introduced supplementary measures to strengthen the open-ended character of QQE. The main measures were as follows:</p> <ul style="list-style-type: none"> <li>a) Accept foreign currency-denominated loans on deeds as eligible collateral</li> <li>b) Extend average remaining maturity of the Bank's JGB purchases from about 7-10 years to about 7-12 years</li> <li>c) Increase the maximum amount of each issue of JREIT to be purchased from the current 5 percent to 10 percent of the total amount of that JREIT issued</li> </ul>
Jan-16	<p>BoJ introduced "<b>QQE with a negative interest rate</b>" in an unexpected manner. In doing so, it introduced a three-tier system under which the outstanding balance of each financial institution's current account at the BoJ is divided into the following three tiers with different rates applying:</p> <ul style="list-style-type: none"> <li>a) Basic balance (applicable interest rate: 0.1%): the average balance during the reserve maintenance period from January to December 2015 less the current required reserves</li> <li>b) Macro add-on balance (applicable interest rate: zero): The total of required reserves, the amount outstanding of the BoJ's provision of credit through the Loan Support Program and the Funds-Supplying Operation to Support Financial Institutions in Disaster Areas, and the macro add-on whose balance is increased every three months by the BoJ board</li> <li>c) Policy-rate balance (applicable interest rate: -0.1%): The outstanding balance of each financial institution's current account at the BoJ in excess of the "basic balance" and "macro add-on balance."</li> </ul>

## Fiscal measures since 2015

Feb-15	The Abe government formed a supplementary budget of JPY3.1trn (0.6% of GDP) mainly to support aged consumers and local economies
Jan-16	The Abe government formed a supplementary budget of JPY3.3trn (0.7% of GDP) mainly to support local areas and earthquake-affected regions
Currently	<p>Given the Kumamoto earthquake that occurred in April 2016, the Abe government is considering forming another supplementary budget probably during the current Diet session that ends on 1 June.</p> <p>There is a growing possibility that PM Abe will postpone the VAT hike planned for April 2017, although he may not rush to make that decision, which could be interpreted as a failure of his policy program (Abenomics) to build an economy resilient to such a hike</p>

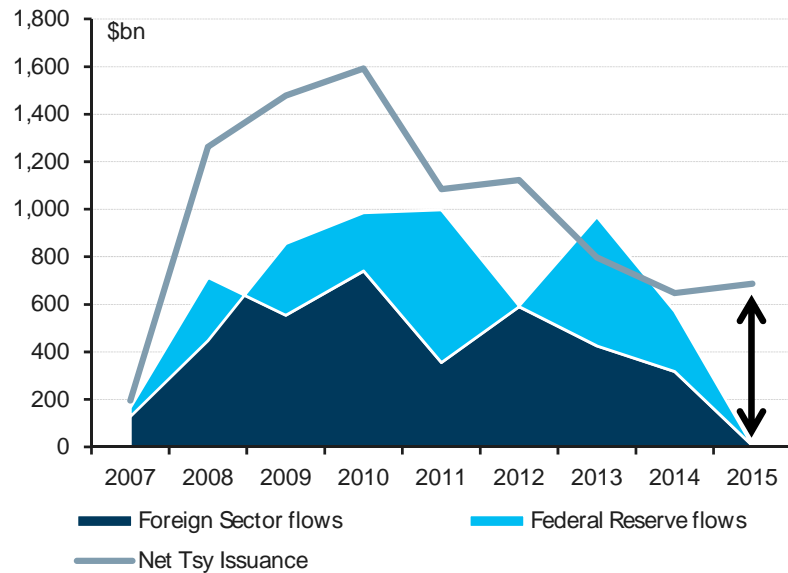
---

## **II: Impact on the US Treasury market**

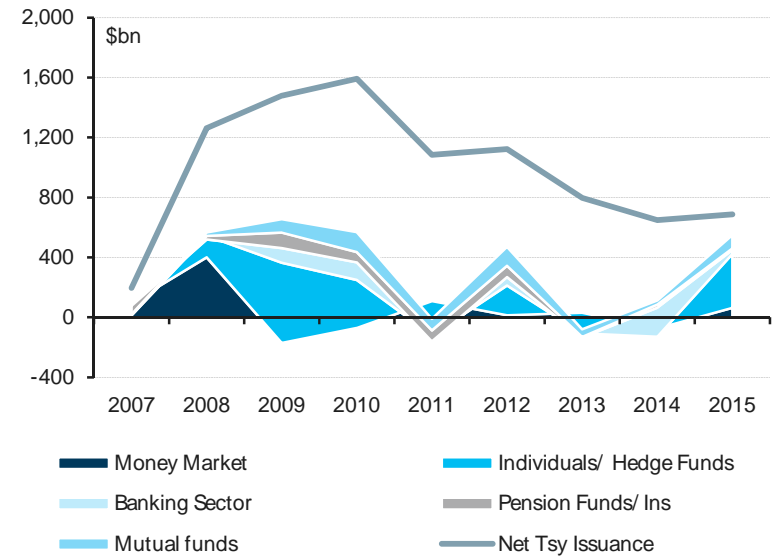
---

# Shifting demand base for Treasuries: from official to private

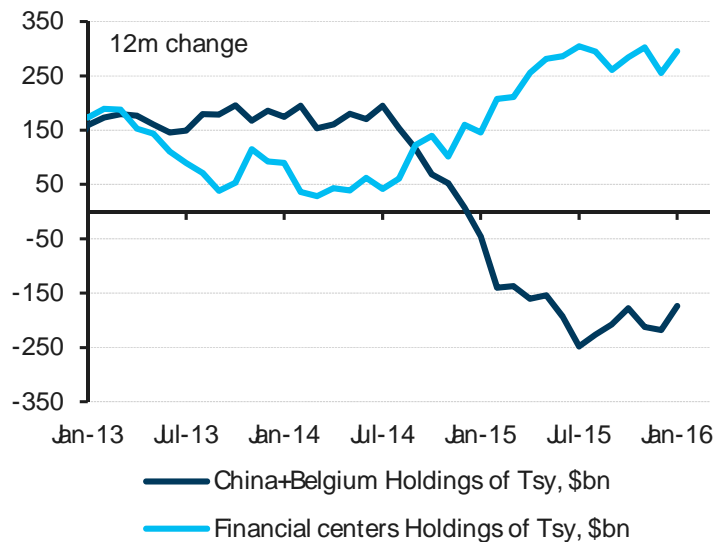
## Foreign investors and the Fed did not absorb issuance in 2015



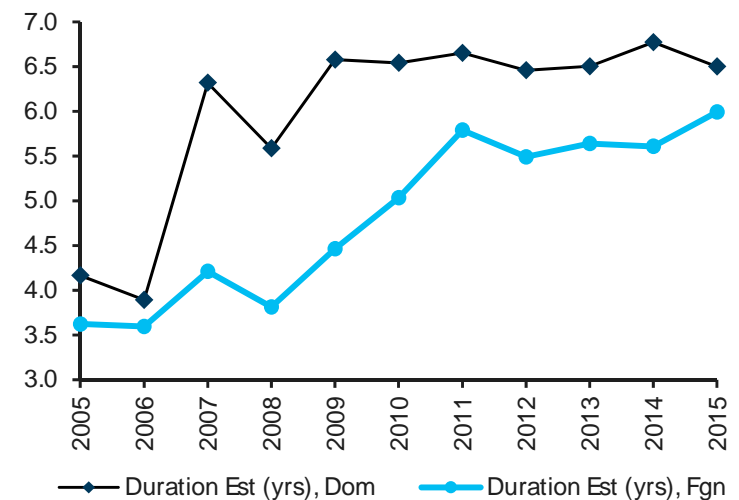
## Private domestic investors have stepped up



## Shift from official foreign investors to private foreign

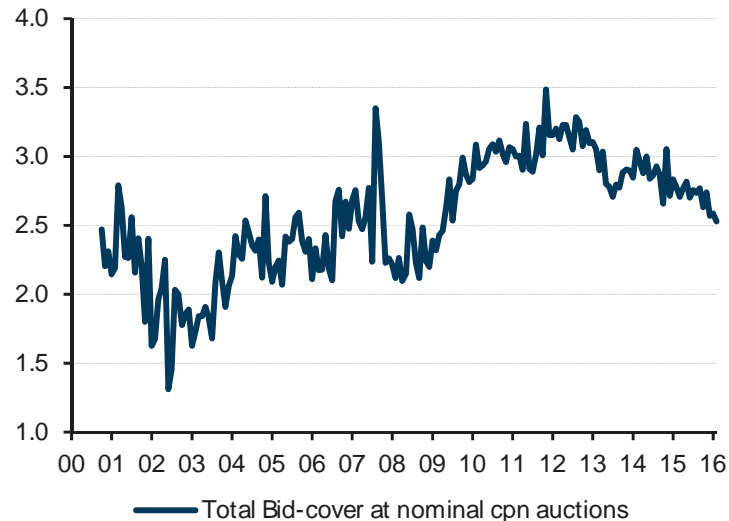


## Foreign investors have termed out at auctions

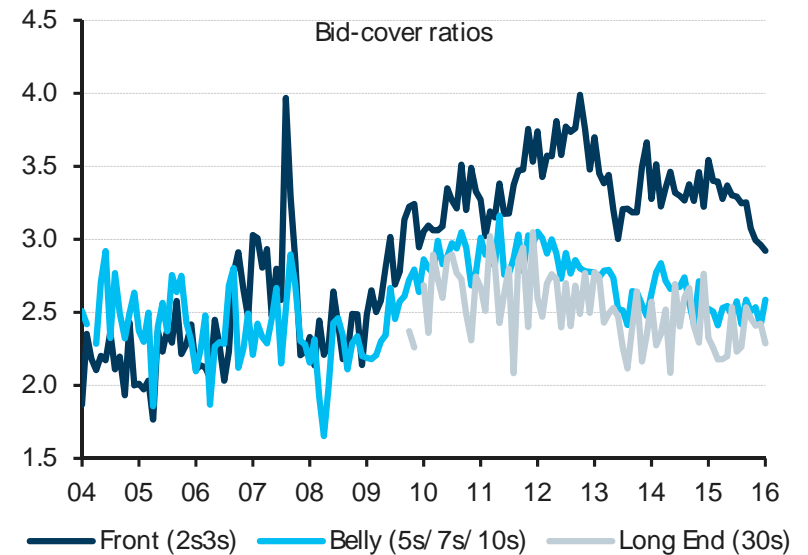


# Domestic investor participation has increased at auctions

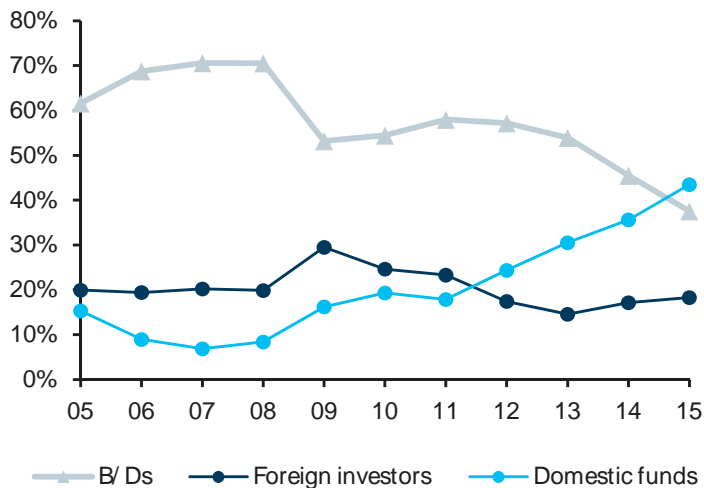
## Bid-cover ratio remain higher than pre-crisis...



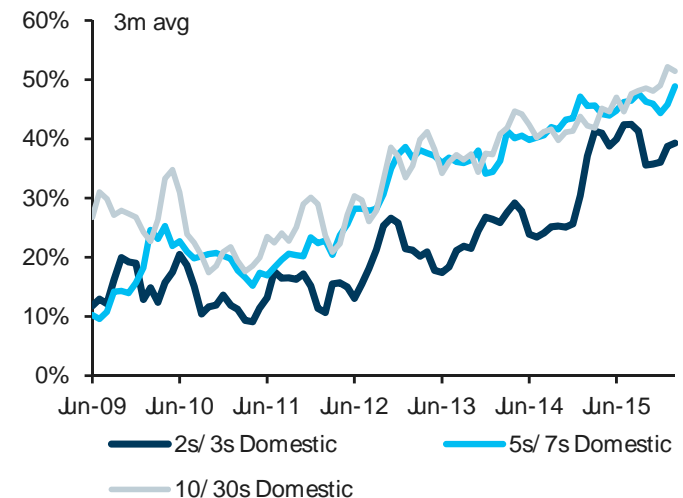
## ...especially at the front end



## Domestic fund participation has increased...

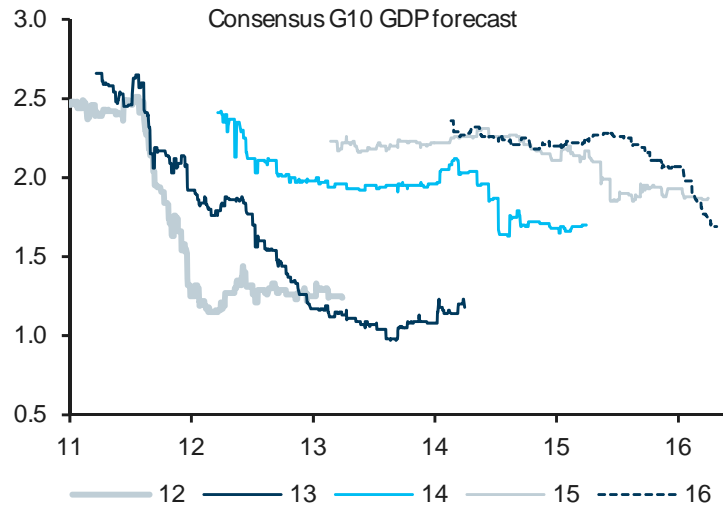


## ...across all tenors, more at the front end recently

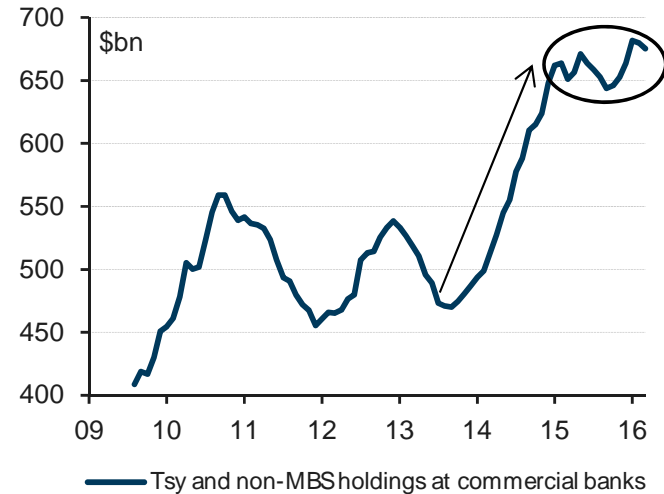


# Reasons for the shift in demand base

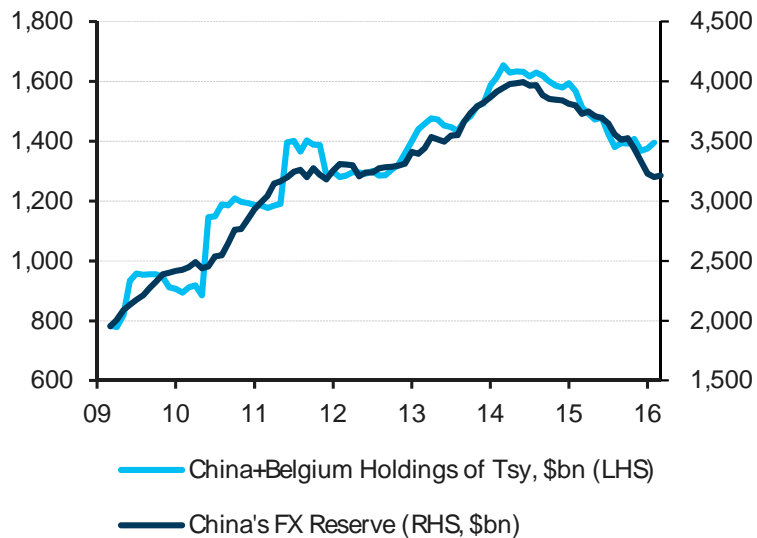
## G10 GDP has disappointed



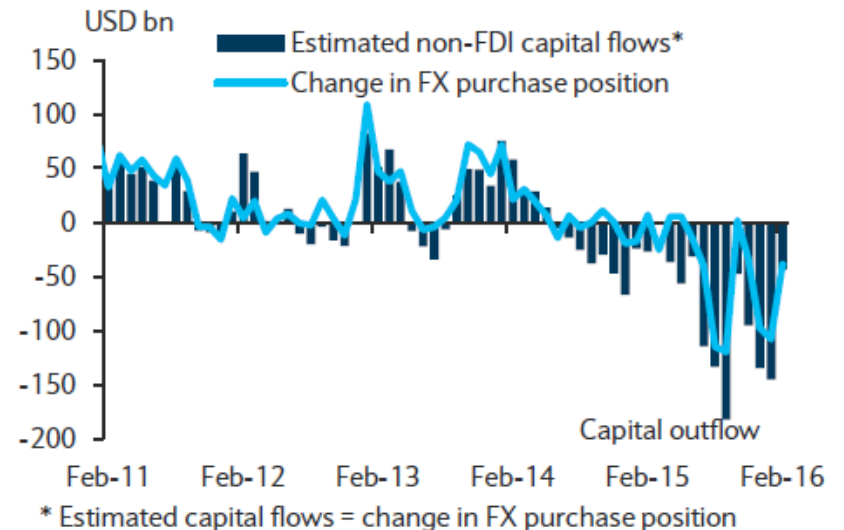
## Banks have been strong buyers until recently (likely for regulatory purposes)



## FX reserves and foreign official holdings of UST – in sync

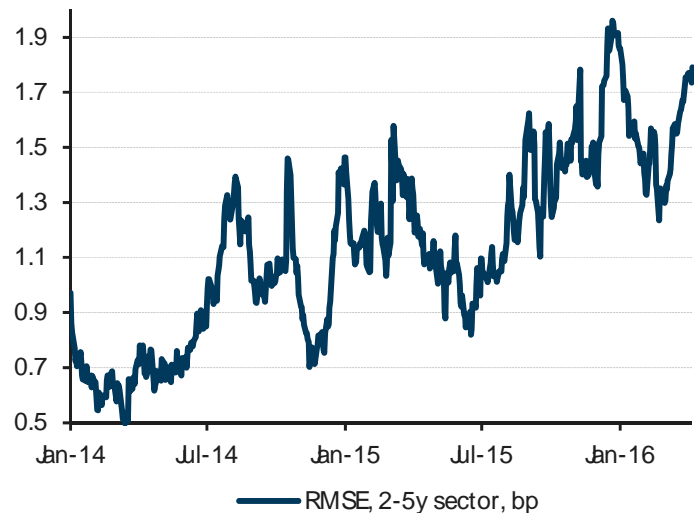


## Estimated non-FDI capital outflows in China

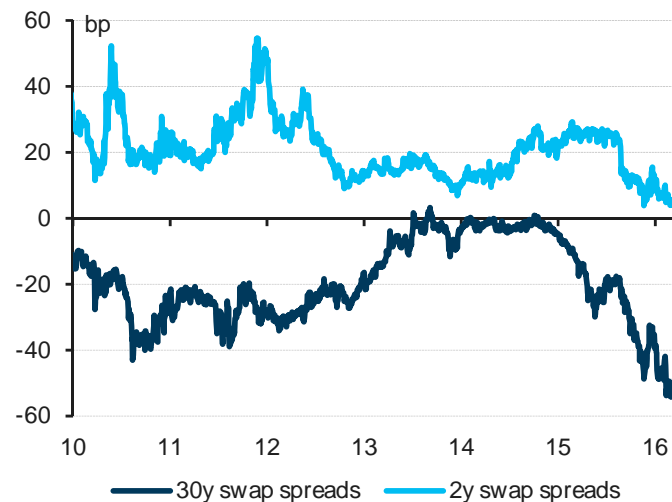


# Dislocations have increased amid decline in official purchases

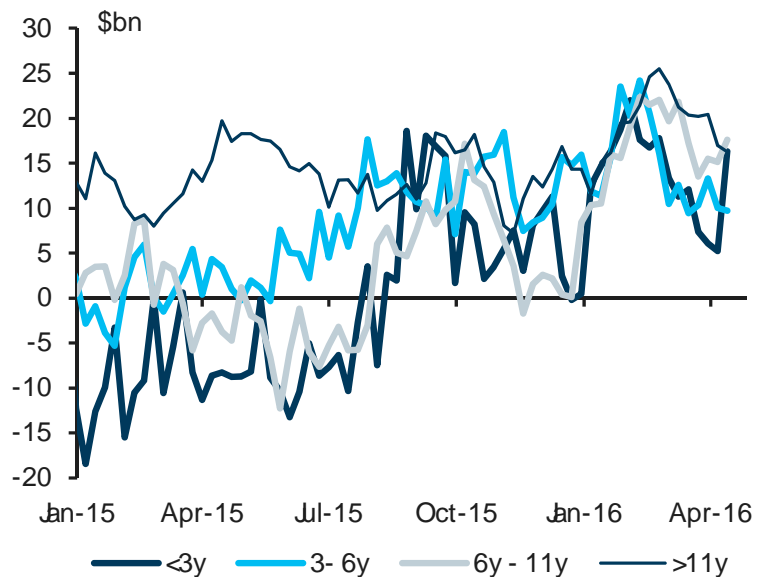
Our measure of front end dislocations has risen



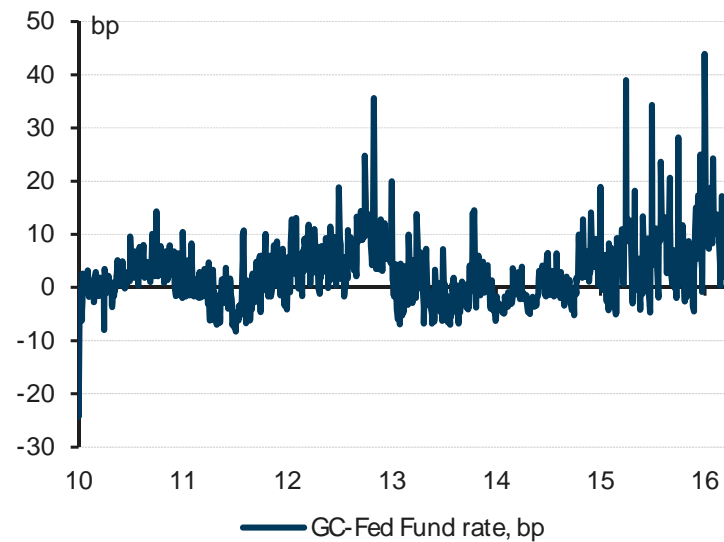
Swap spreads have tightened sharply



Dealer holdings of Treasuries has picked up

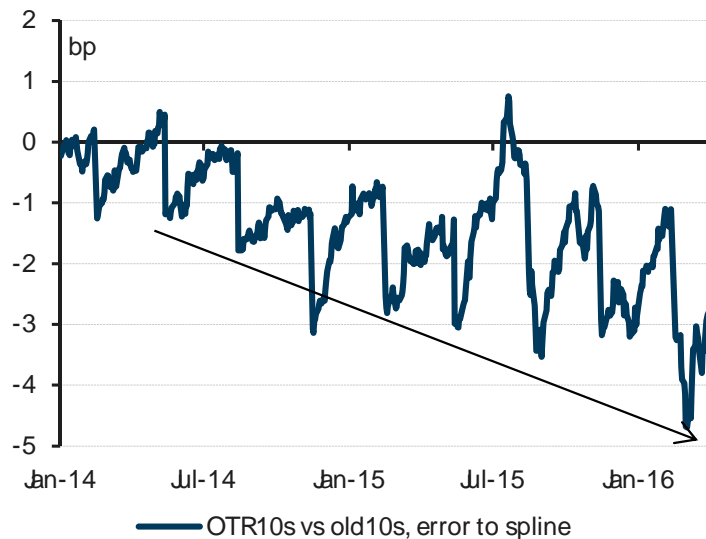


Higher secured rates relative to unsecured (repo vs FF)

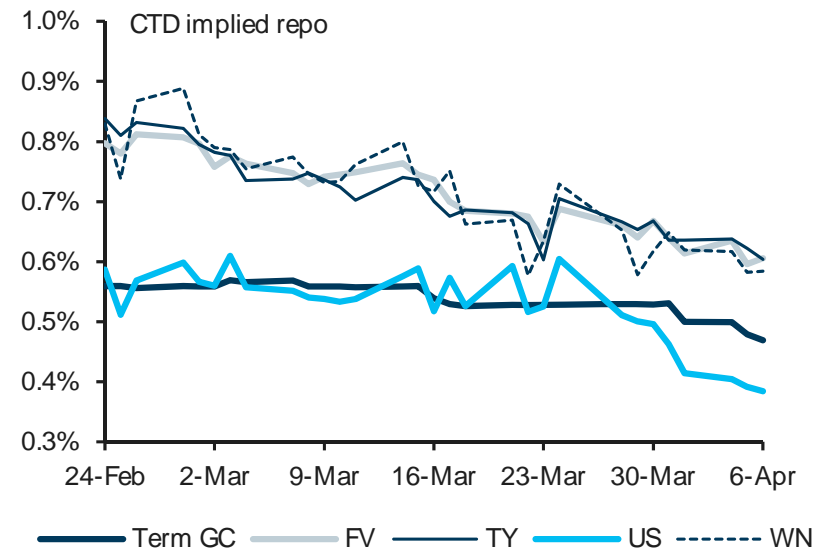


# Metrics of liquidity in the Treasury market

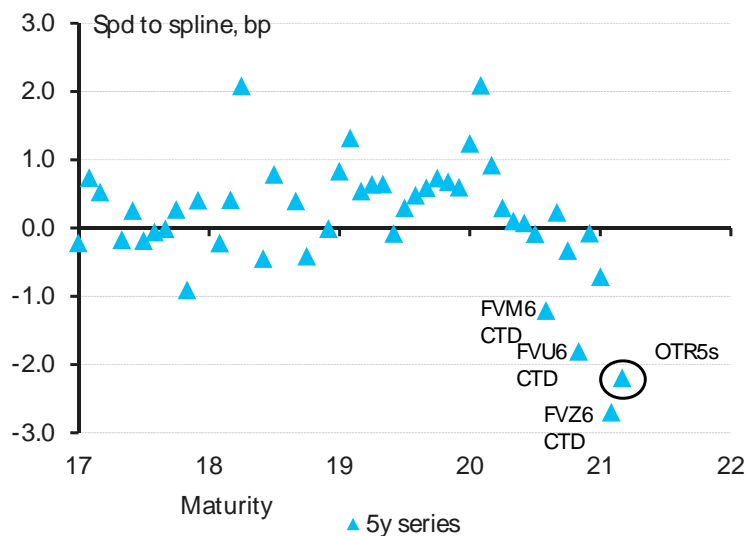
OTR10s vs old10s



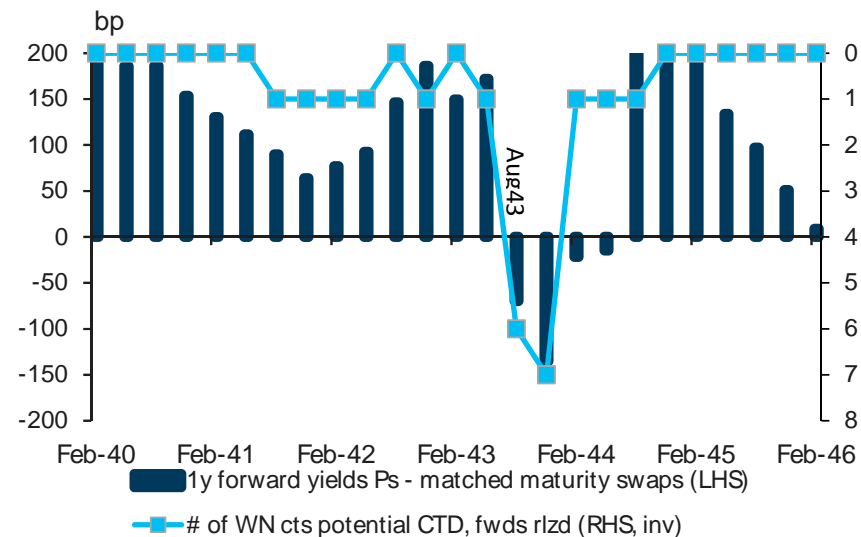
Treasury futures have traded very rich



Securities likely to be the CTD trade rich, in the belly...



...and the long end



---

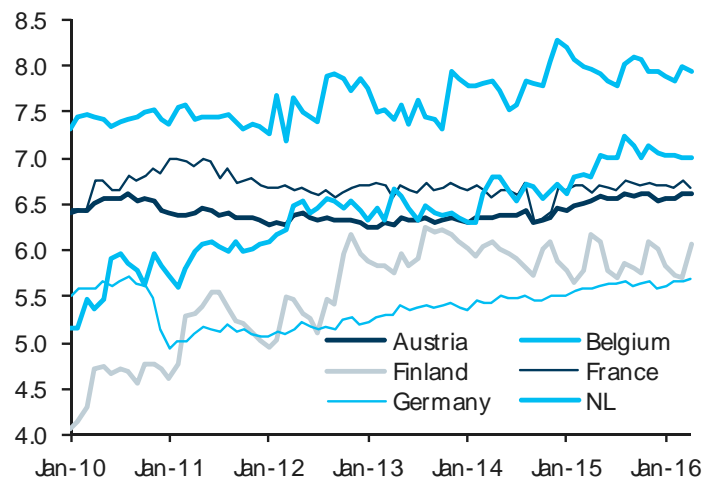
### **III: Impact on other sovereign debt issuers**

---

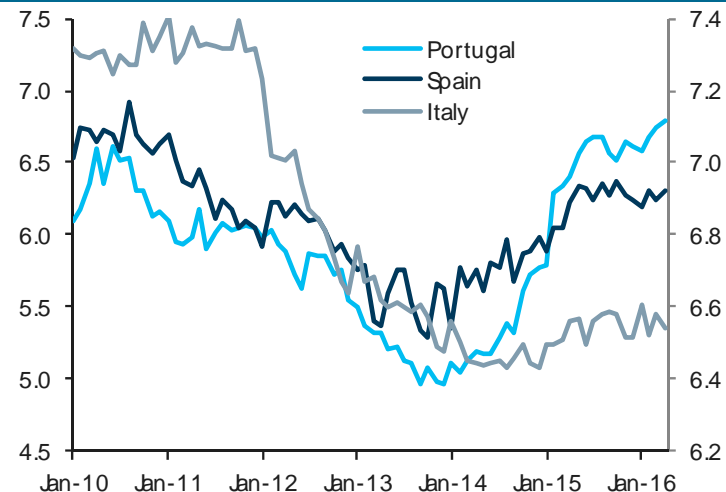


# Average Life extended at record low interest rates in EGBs

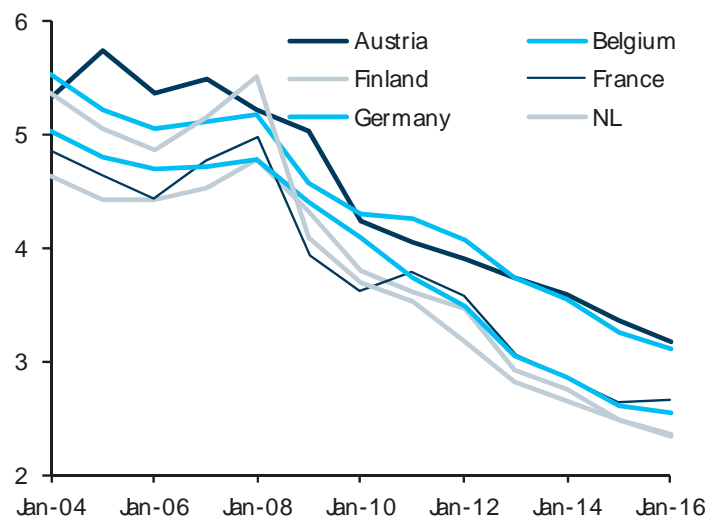
**EGB Core debt average residual maturity – trending up**



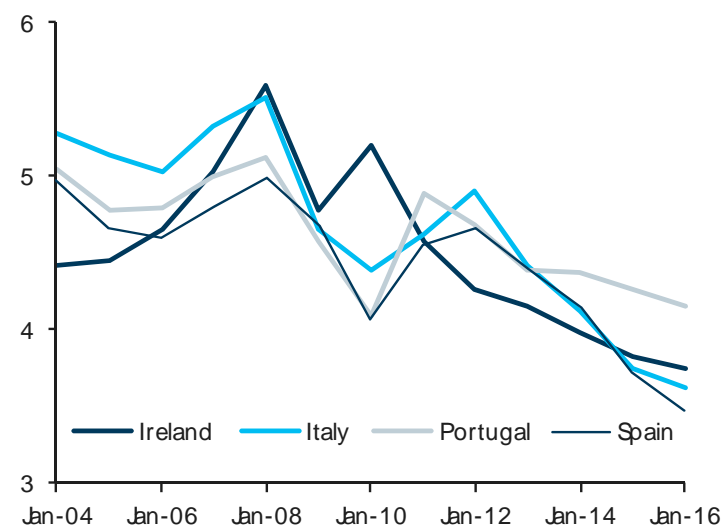
**EGB Periphery debt average residual maturity – rebounding notably**



**EGB Core Interest Cost as % of Gross Debt**



**EGB Periphery Interest Cost as % of Gross Debt**

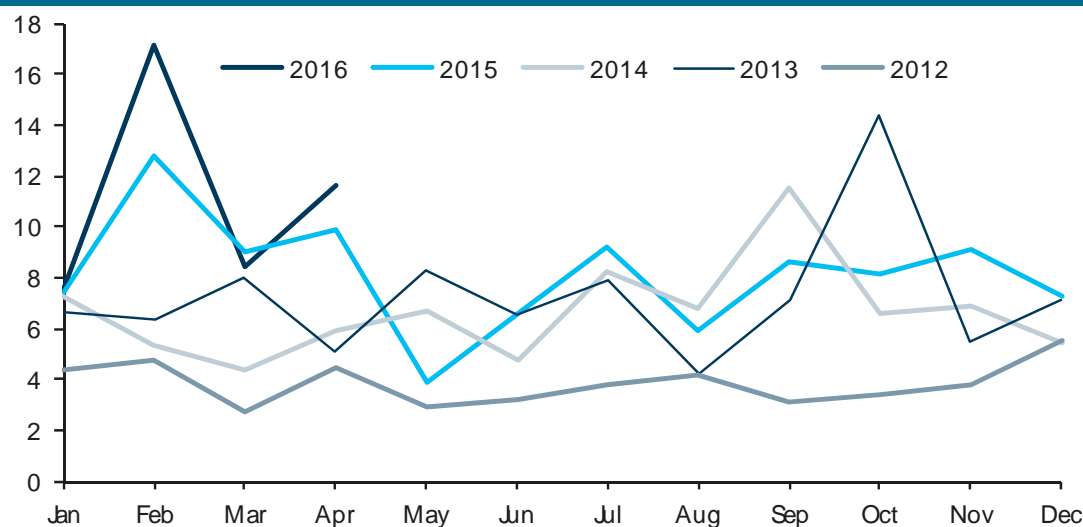


# ECB QE seeing issuance being skewed to longer maturities

## Extension of maturities by issuers, especially in the more opportunistic periphery

	Difference 2015 vs 2014				2015				2014			
	2-3	5	10	>10	2-3	5	10	>10	2-3	5	10	>10
Germany	3%	-4%	0%	1%	34%	26%	33%	7%	31%	30%	33%	6%
France	-1%	-3%	10%	-5%	20%	21%	40%	18%	21%	25%	31%	23%
Italy	-5%	-6%	4%	7%	26%	25%	33%	16%	31%	31%	29%	9%
Spain	5%	-11%	-3%	9%	22%	22%	36%	20%	17%	33%	39%	11%
Belgium	7%	-5%	-5%	2%	7%	7%	49%	38%	0%	11%	53%	36%
Holland	2%	-2%	-1%	0%	34%	22%	32%	13%	31%	24%	33%	12%
Portugal	0%	-21%	21%	0%	0%	5%	76%	18%	0%	27%	55%	18%
Finland	12%	-35%	-6%	29%	12%	9%	37%	42%	0%	44%	43%	13%
Austria	0%	-15%	17%	-3%	13%	10%	68%	9%	13%	25%	50%	11%
Ireland	0%	36%	-69%	32%	0%	36%	0%	64%	0%	0%	69%	31%
Eurozone Aggregates	0%	-6%	3%	4%	24%	22%	37%	17%	24%	28%	34%	14%

## Weighed Monthly Average Life Issuance in Spain – heavier longer end issuance so far in 2016



# ECB QE: Displacement effect in the EGB market

## Displacement effect in the EGB market under expanded QE

In €bn	Gross Issuance Rest of 2016	Net Issuance Rest of 2016	QE Displacement Effect
Germany	126.0	-3.5	-132.7
France	153.0	52.9	-52.9
Italy	186.0	7.3	-89.6
Spain	88.5	23.5	-46.0
Belgium	28.5	0.9	-18.6
Holland	27.0	-1.0	-32.5
Portugal	12.5	8.1	-5.6
Finland	7.0	-1.3	-11.2
Austria	11.1	-0.7	-16.1
Ireland	6.0	-2.1	-11.4
Total	645.6	81.7	-416.7

## EGB market ownership of the ECB under expanded QE

% of eligible QE universe owned by ECB (only PSPP)		
	Feb-16 (excluding below depo rate yielding bonds )	Scenario B: Mar-17 €80bn QE with PSPP of €60bn
Germany	16.7%	33.0%
France	8.6%	20.1%
Netherlands	10.5%	24.2%
Belgium	6.0%	13.2%
Austria	8.2%	19.0%
Finland	12.8%	29.4%
Italy	10.4%	19.7%
Spain	12.5%	25.4%
Portugal	19.4%	34.5%
Ireland	12.8%	22.2%
Core Ave	10.8%	23.7%
Peripheral Ave	11.6%	22.3%
All EU Ave	11.1%	23.2%

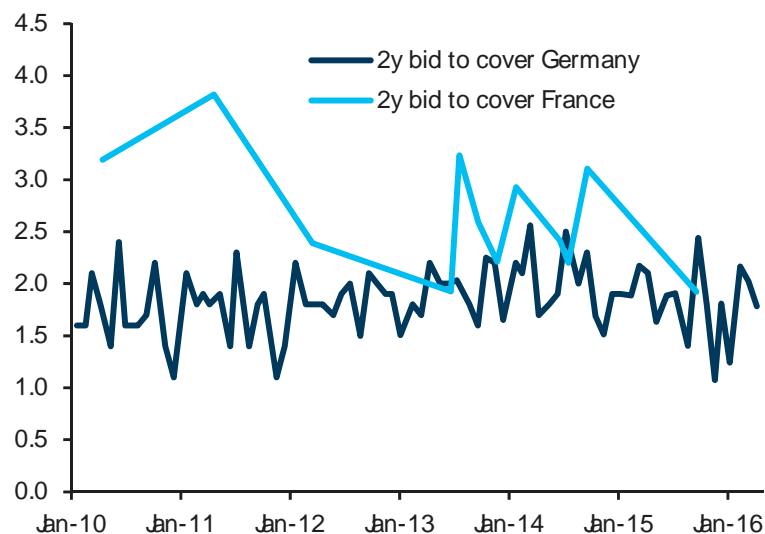
# EGB issuers have adopted more flexibility in various forms

## Changes in issuing procedures over the past few years

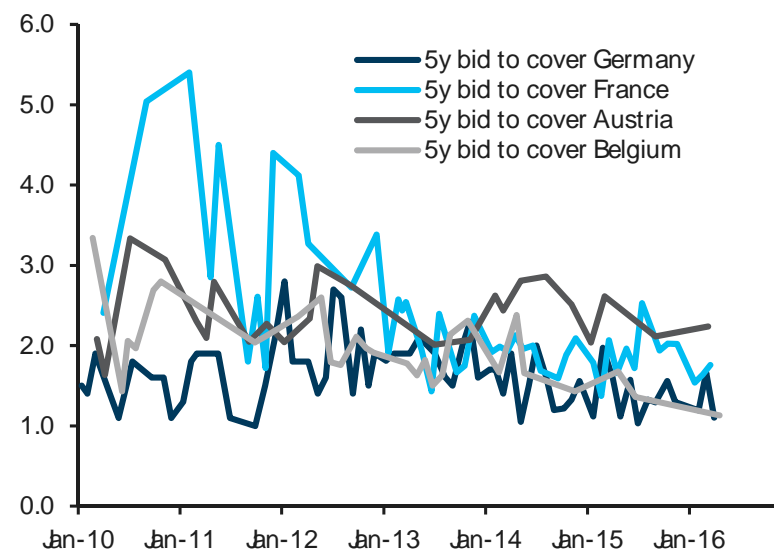
Austria	More emphasis on investor relations
Belgium	Increased focus on predictability and flexibility in order to respond to changing market environment, achieved through enhanced communication. Moved to monthly auctions from every other month frequency.
Finland	Diversification of funding sources, more coordination with PDs.
France	More issuance at the ultra long end thanks to QE helping push investors further out and lower yields. The Tresor made its issuance more flexible to meet off-the-run bond demand from ECB QE: the proportion of total issuance relying on off-the-run issues hit its highest point since 2011 at 33% in 2015 compared to 21.8% in 2014. Introduction of new long end 20y benchmark alongside 15, 30 and 50y.
Germany	Continued to commitment to high predictability in issuance patterns. In 2016, Finance Agency switched to more frequent and smaller taps of 30y bond and also in off-the-runs instead of large 1-2 tap approach in pure new benchmarks
Ireland	Syndications are used also for re-openings than just new issuance. Private placements are also used (eg. new 100y issued recently).
Italy	More commitment to regularity, transparency and predictability while taking advantage of QE to issue more in medium/ long-term maturities and reduce short-term ones. More off-the-run taps, new 7y and 20y line introduction, issuance of BTP Italia in recent years alongside other technical measures.
Netherlands	Dutch Treasury aims to extend average maturity of debt from 4.5yrs at 2014 to as high as 6.5yrs going forward. Its goal is to reduce the use of interest rate swaps and increase budgetary stability and reduces future risks through the extension of the maturity of the debt issuance.
Spain	Very regular detailed updates in its debt management presentation to enhance transparency. Alongside regular auctions and syndications, more flexibility sought through alternative funding tools such as private placements and possibility of special auctions.
Portugal	Very regular detailed updates in its debt management presentation to enhance transparency. Bond market volatility still keeps heavy reliance to syndications of new benchmarks as well as reopenings.
United Kingdom	In a notable move at the March 16 budget, UK DMO allowed itself more flexibility to respond to market conditions to reflect changes in regulatory backdrop and market infrastructure. The DMO has now elected to increase the frequency of and reduce the average size of auctions alongside other technical measures.

# EGB bid-cover ratios and tails have been stable

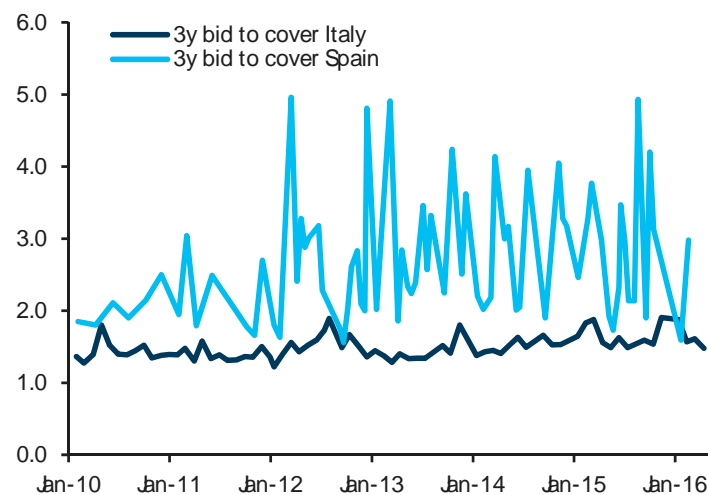
**Bid to covers are broadly stable in short end...**



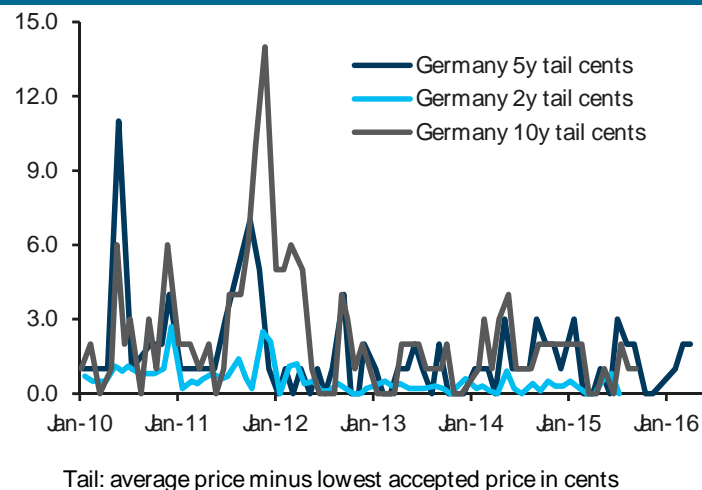
**...and also in belly core**



**Periphery bid to covers have also not shown any clear trend in the past few years**



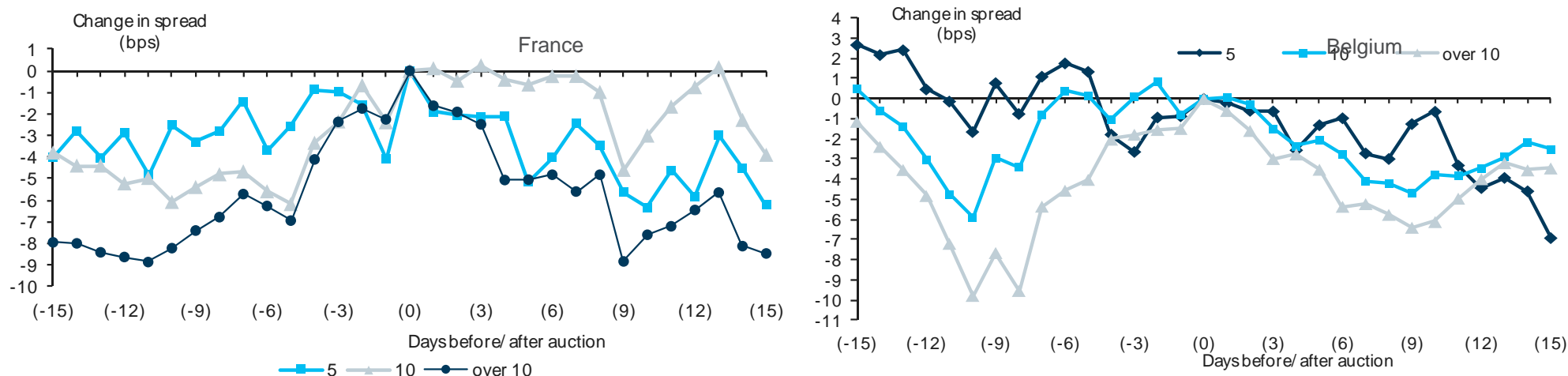
**Tails in German auctions have averaged between 0-3 cents since 2013**



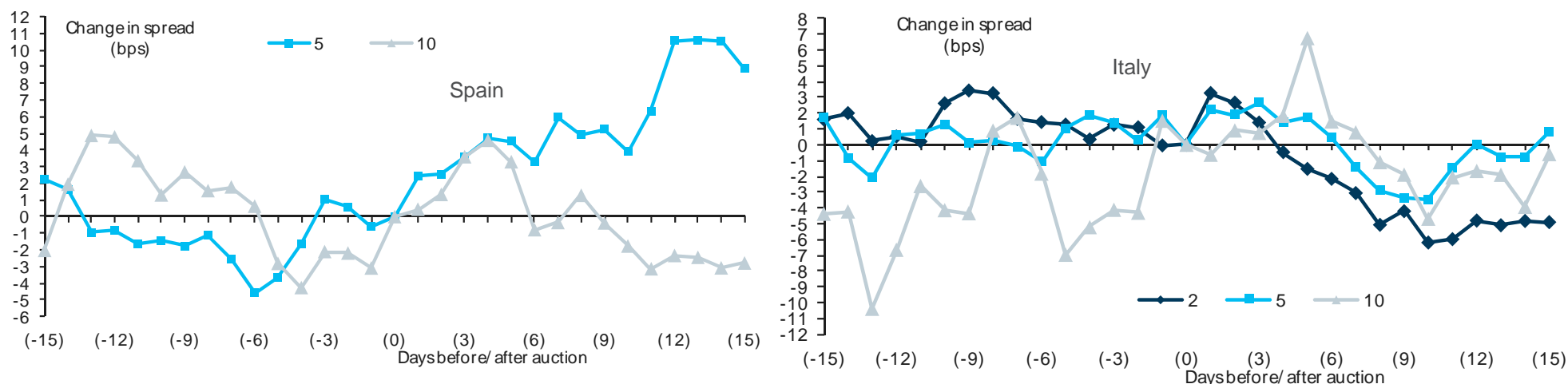
Tail: average price minus lowest accepted price in cents

# Auction concessions vs Bund in peripheral Europe

Core/semi-core EGB issuers experience modest auction concessions especially at the ultra long end



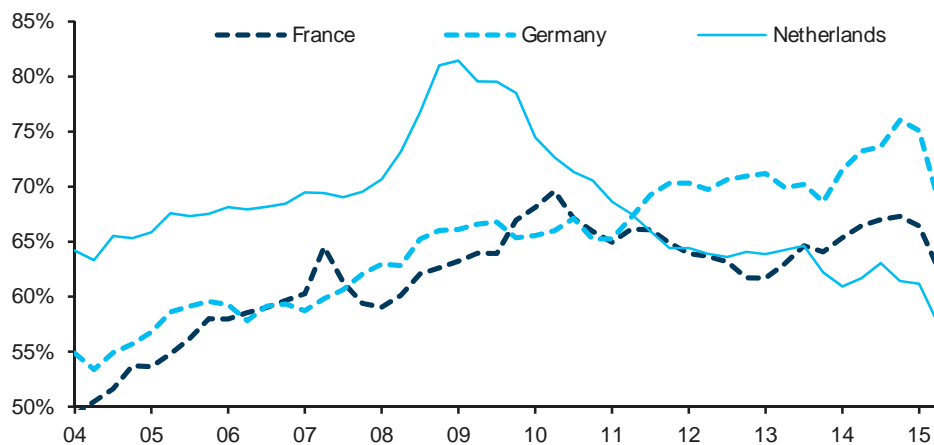
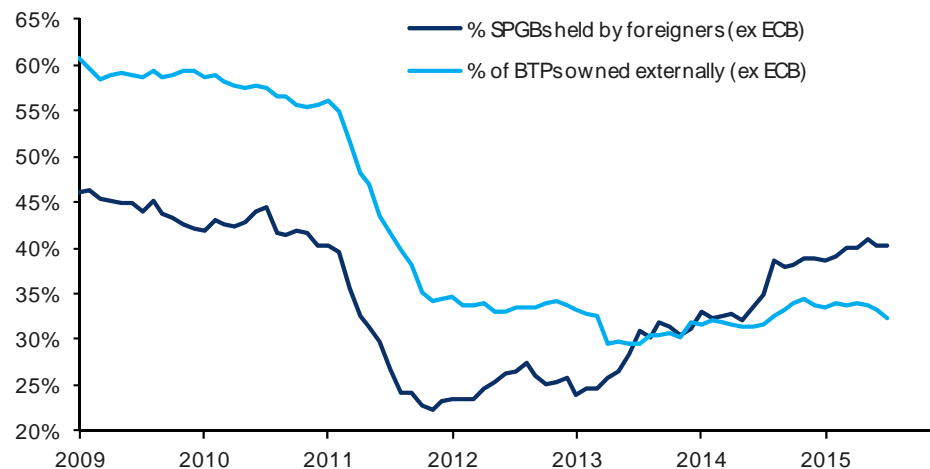
While peripheral bonds also experience auction concessions, they are much less than the eurozone crisis period



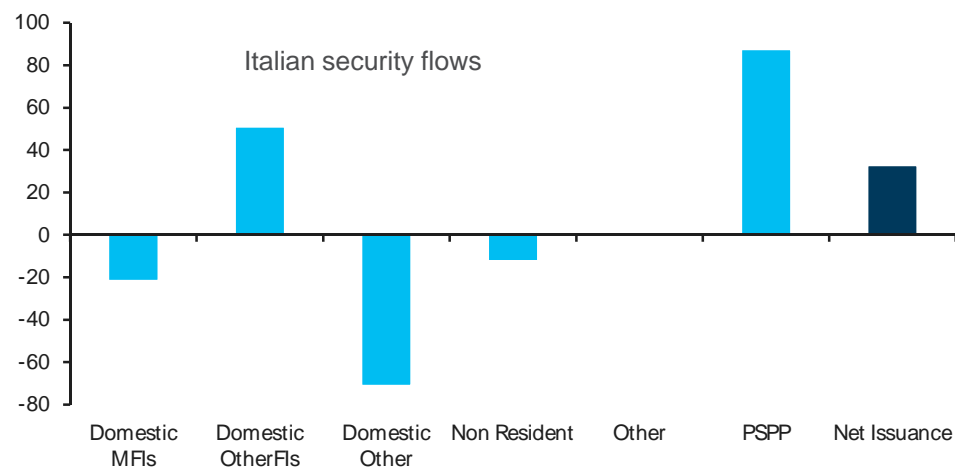
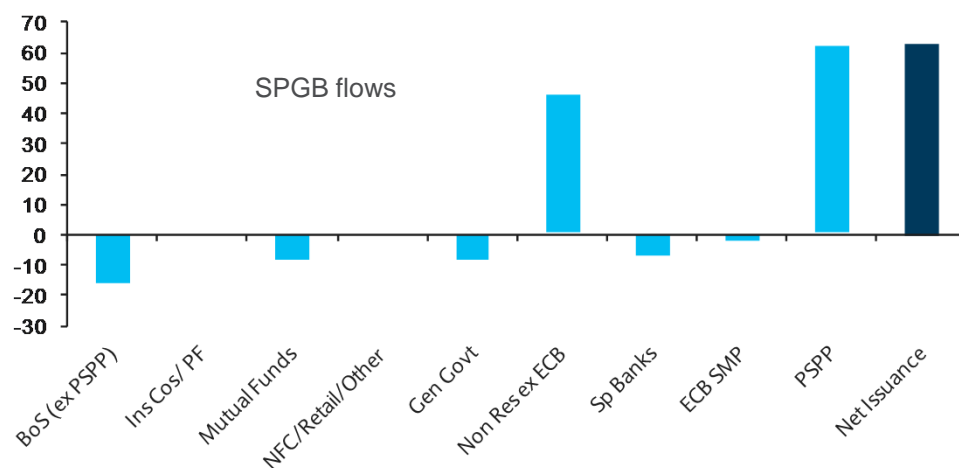
Source: Barclays Research, Note: auction concessions are calculated from the average of all auctions in 2015

# EGB ownership and ECB's QE support for net issuance

Non resident ownership has been stable in core EGBs but increasing in periphery after sharp falls during crisis

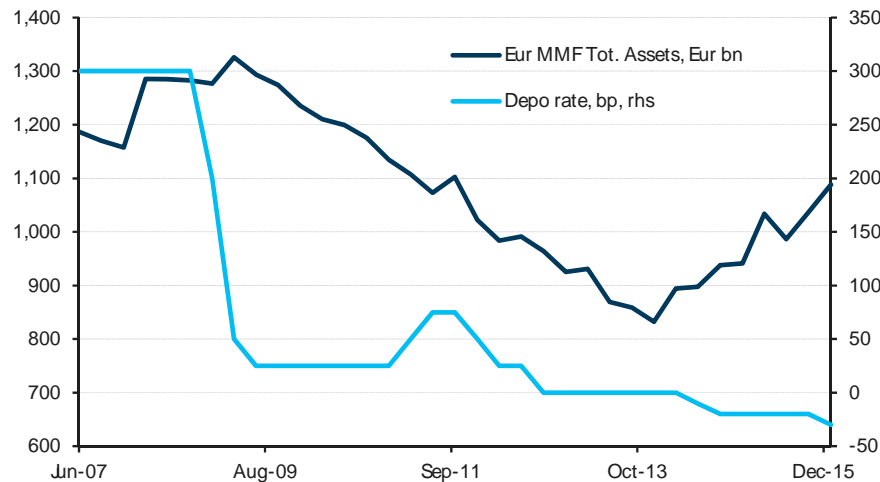


EGB QE has been strongly supportive of net issuance since QE started

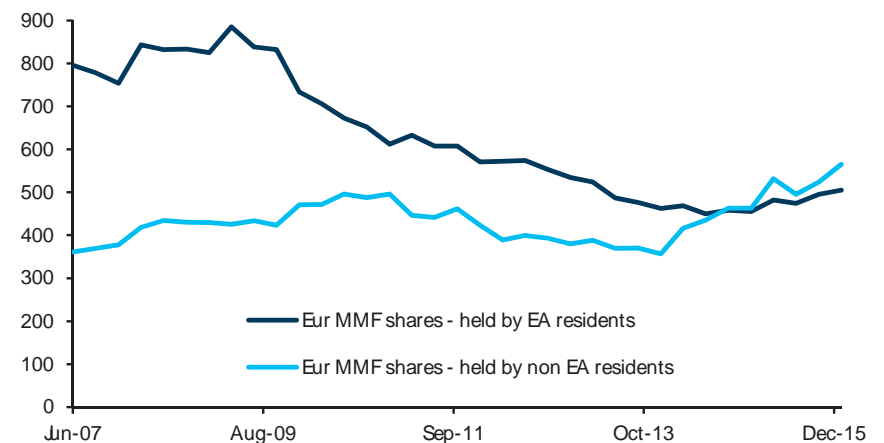


# Despite negative rates, MMF total assets have increased

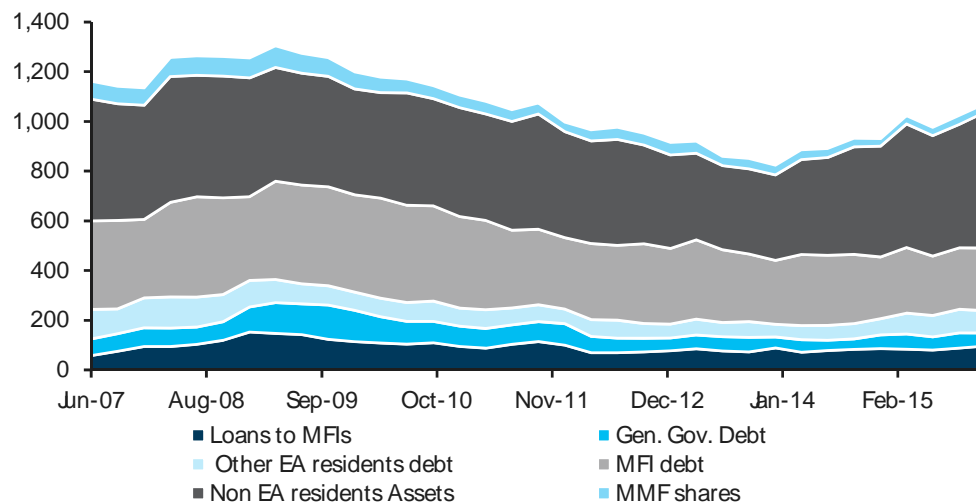
## Euro MMF total assets and ECB's monetary policy



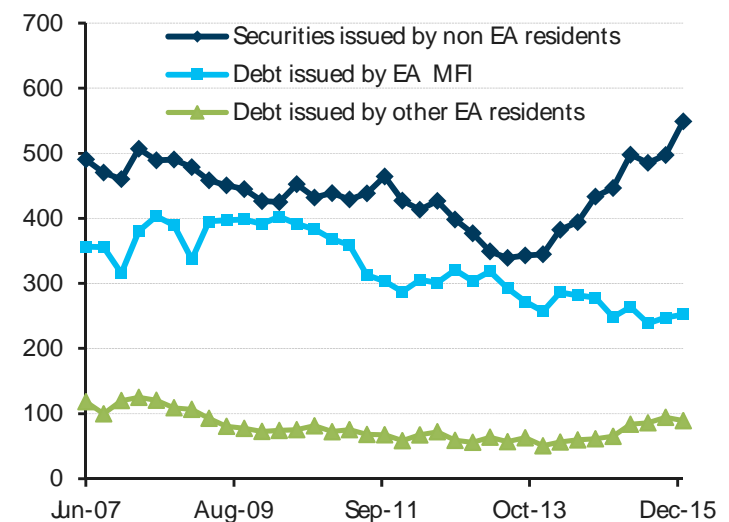
## MMF shares held by non-residents have risen faster



## MMF asset breakdown... non EA assets allocation has increased



## MMF holdings of non EA resident issued securities has risen while those issued by MFI has fallen





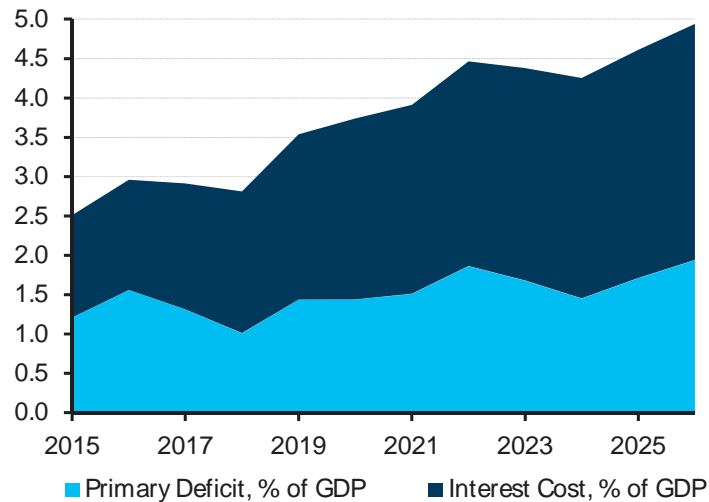
---

## **IV: Medium term challenges for the US Treasury**

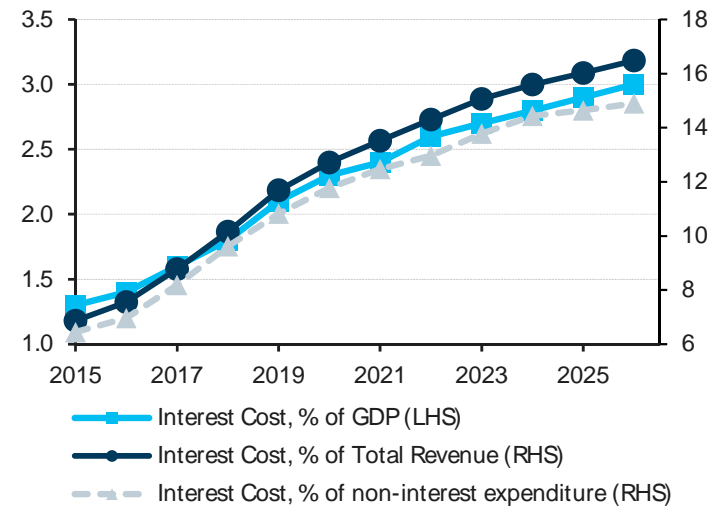
---

# A rise in rates can put greater focus on interest costs

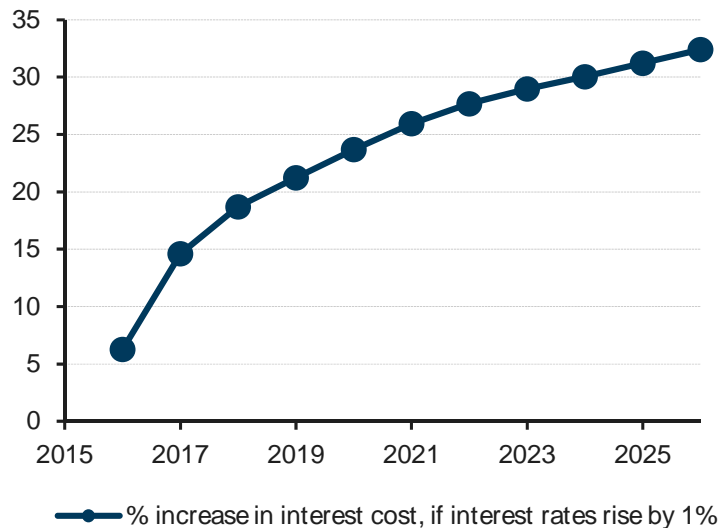
Interest costs expected to rise as share of total deficit



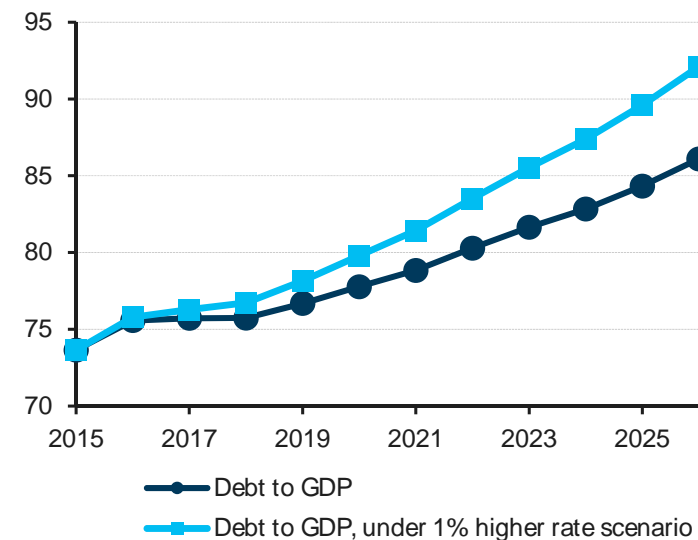
In basecase, interest costs to reach 3% of GDP (16% of revenue) in 10 years



% increase in interest costs if rates rise by 1% per year

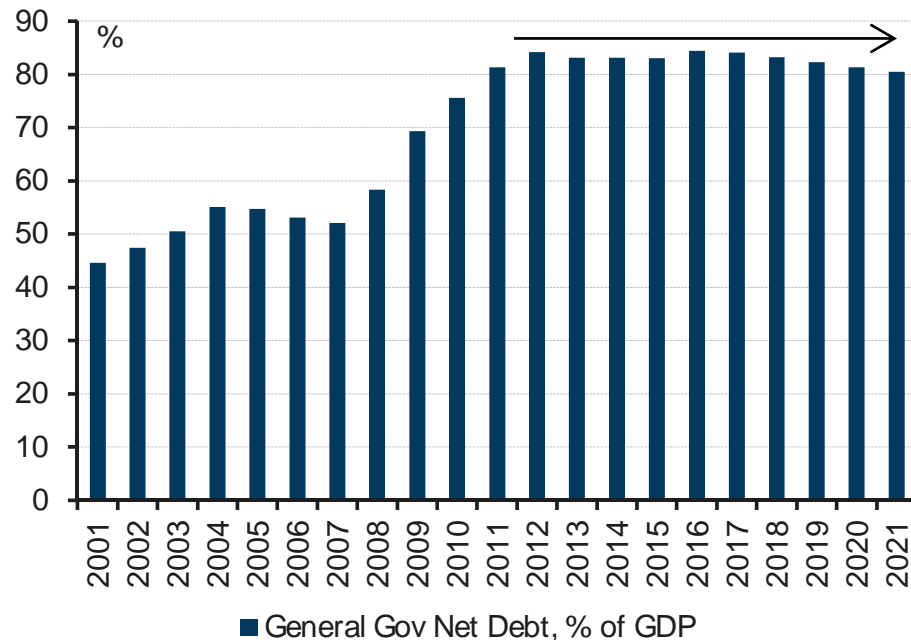


Debt to GDP increase in 1% interest rate rise scenario

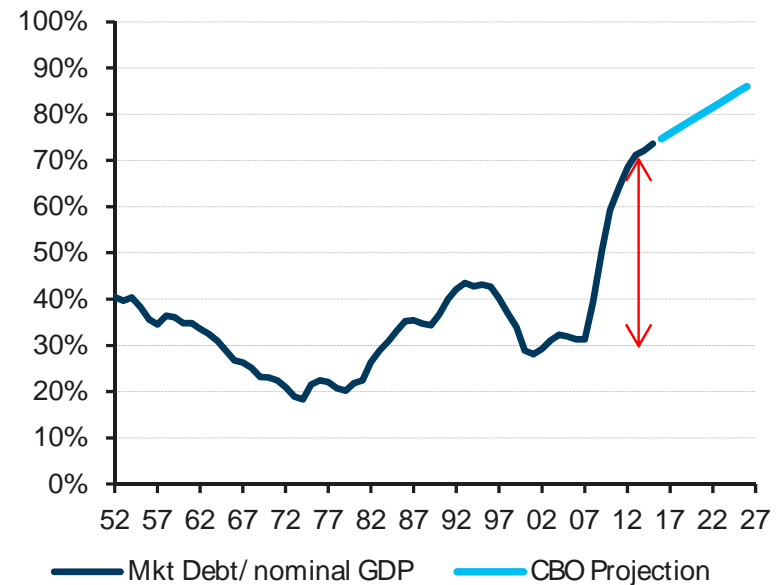


# Flexibility to handle next economic downturn

Debt to GDP to remain elevated in G7 economies

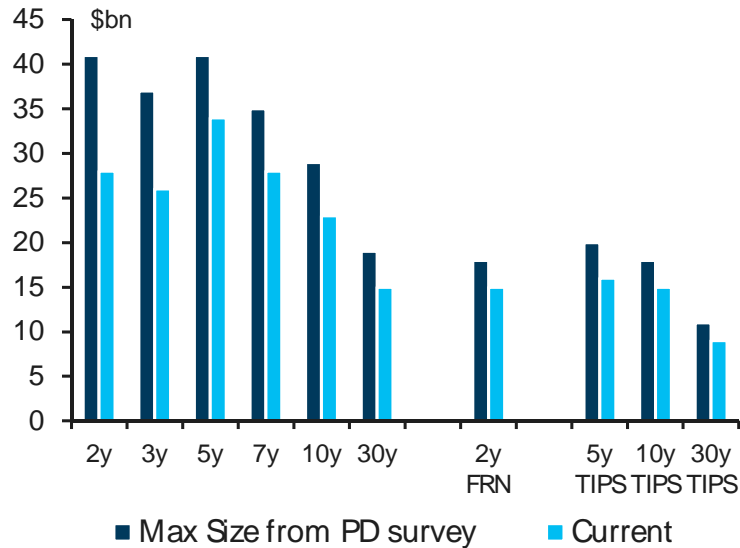


Debt to GDP ratio in the US is set to rise further

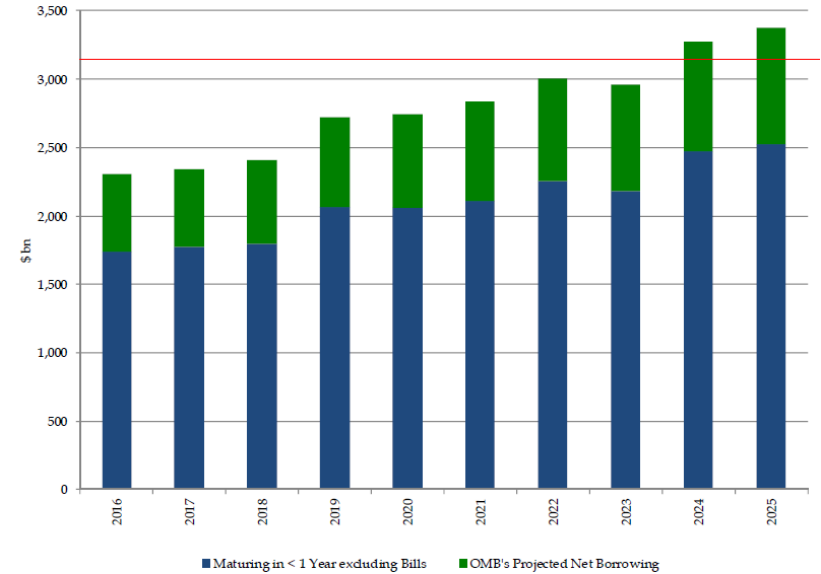


# Enough flexibility on issuance profile in the medium term

## Current auction coupons vs max size estimate (from PD Survey)



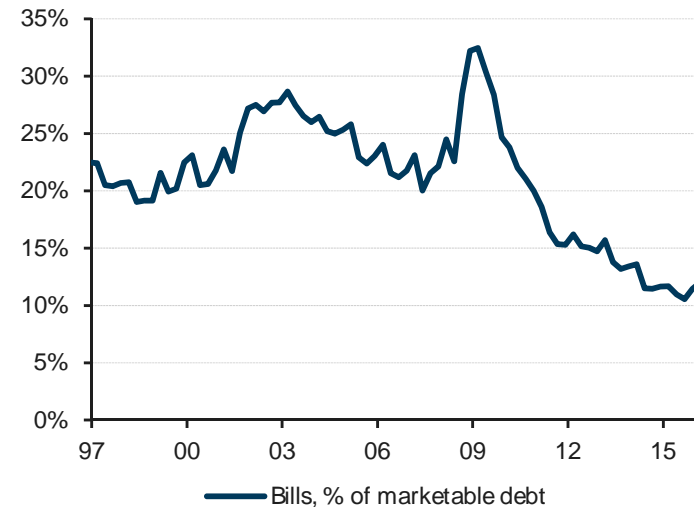
## Treasury not likely to hit against max limit in the medium term



## Multi-decade high WAM gives room for shortening if required

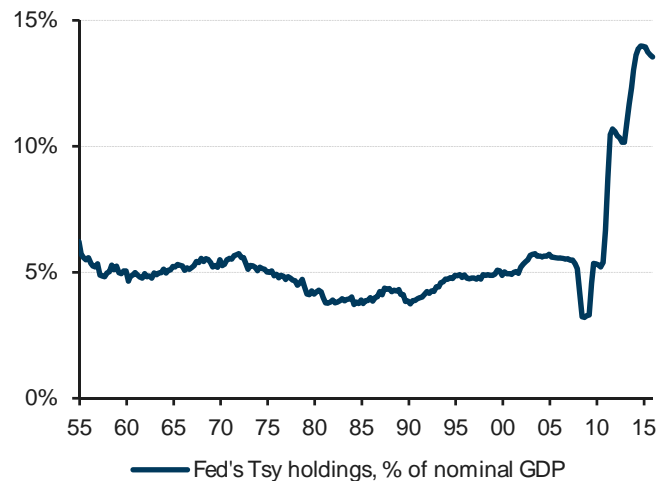


## Bills, as share of outstanding, are near lows

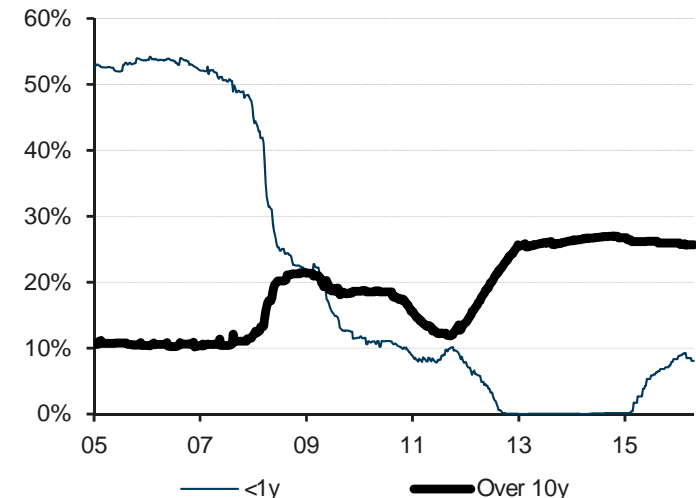


# Potential unwind of QE is a medium term challenge

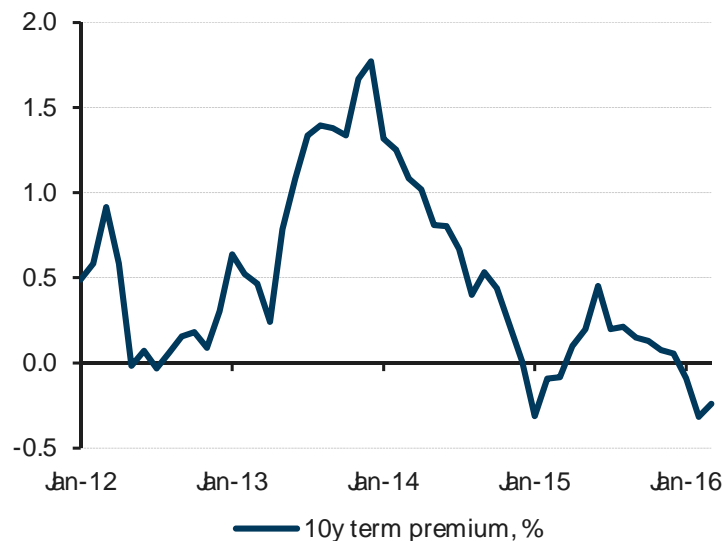
Fed holdings of Treasuries has risen...



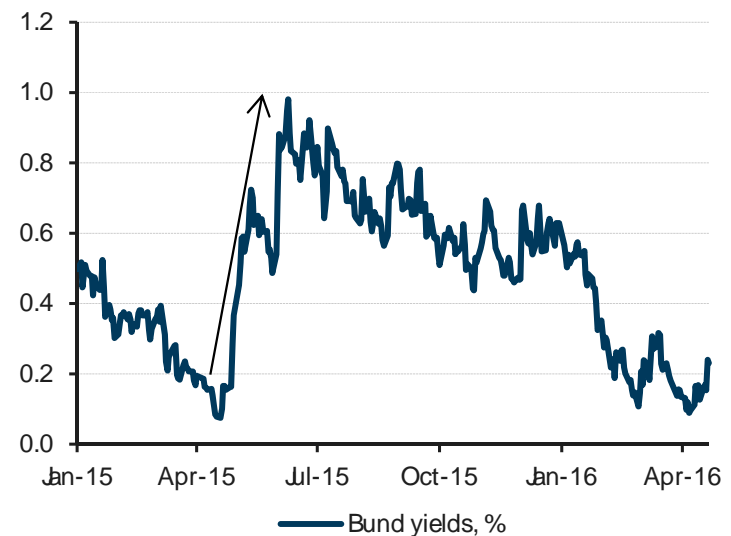
Longer tenor holdings at SOMA have risen



Term premia rose sharply during taper tantrum, and bunds yields rose sharply

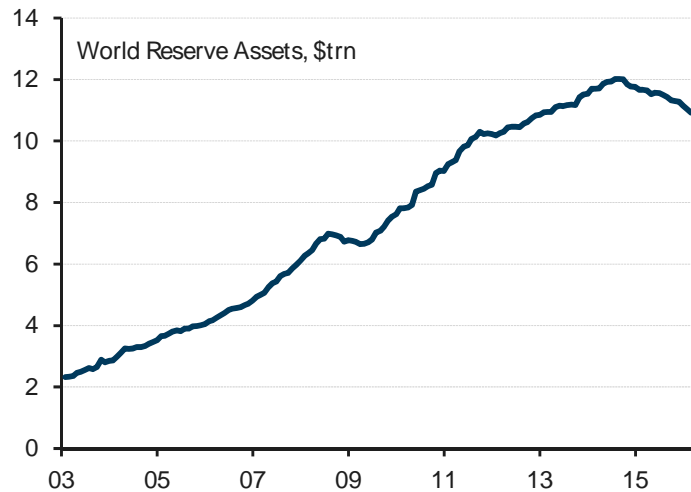


SOMA Maturity

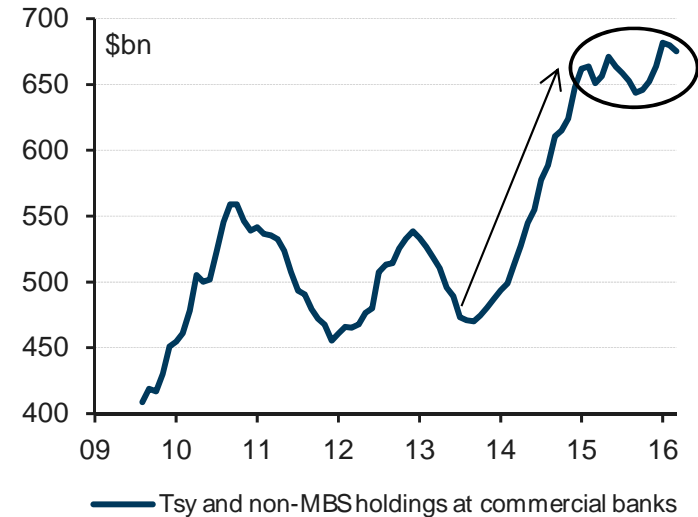


# A decline in demand from price insensitive investors

## World reserve assets have plateaued



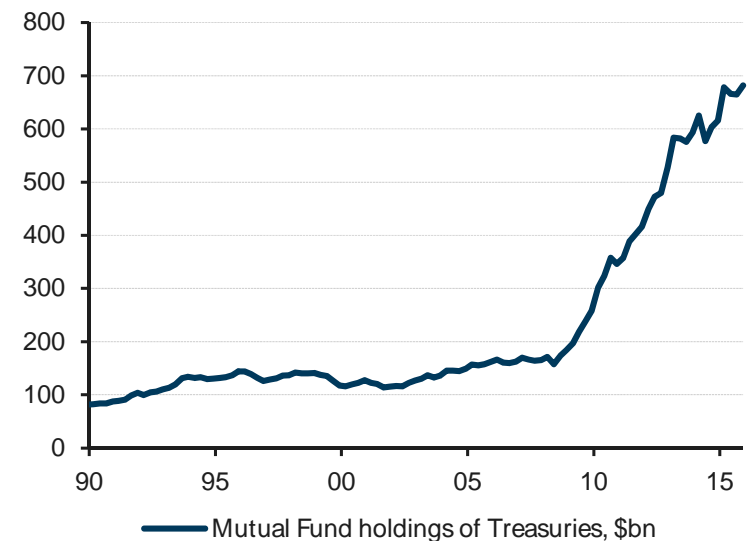
## Regulatory demand from banks for Treasuries may have peaked



## Household holdings of Treasuries has increased sharply...

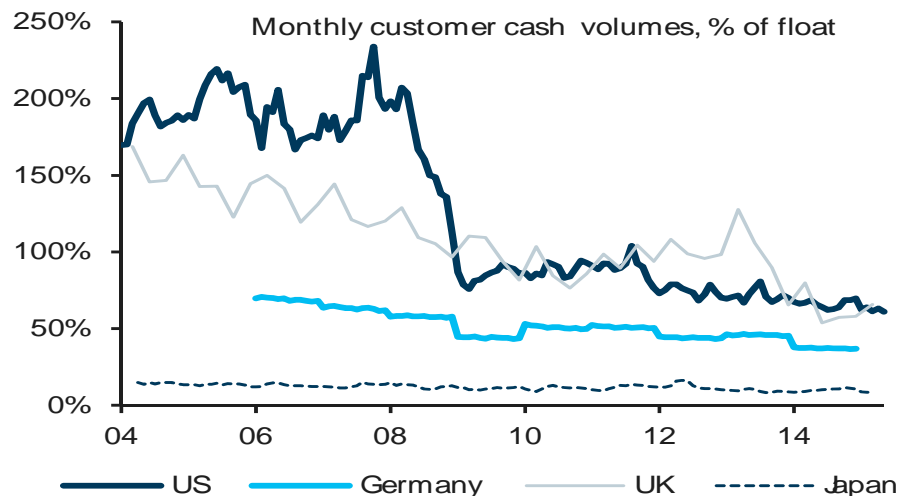


## ...as has holdings by mutual funds

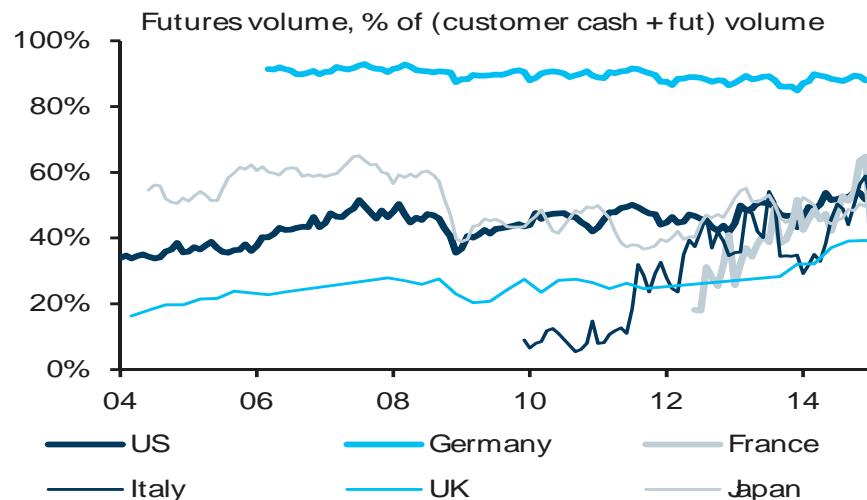


# Structural changes in market present a challenge

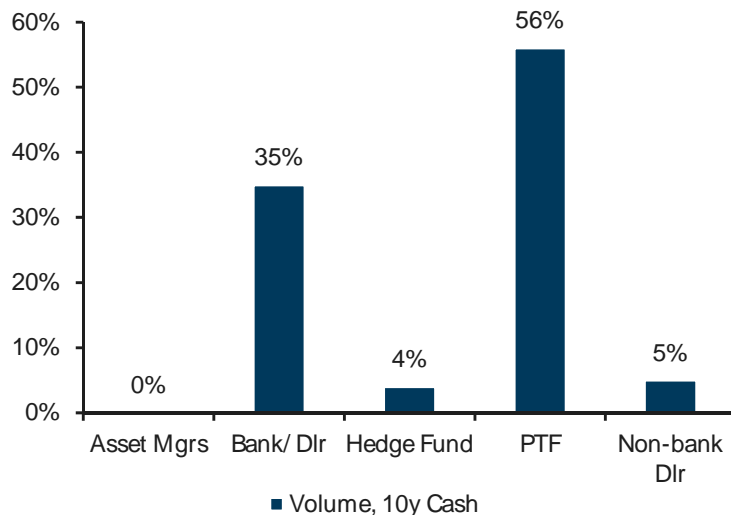
## Turnover has declined in sovereign bond markets...



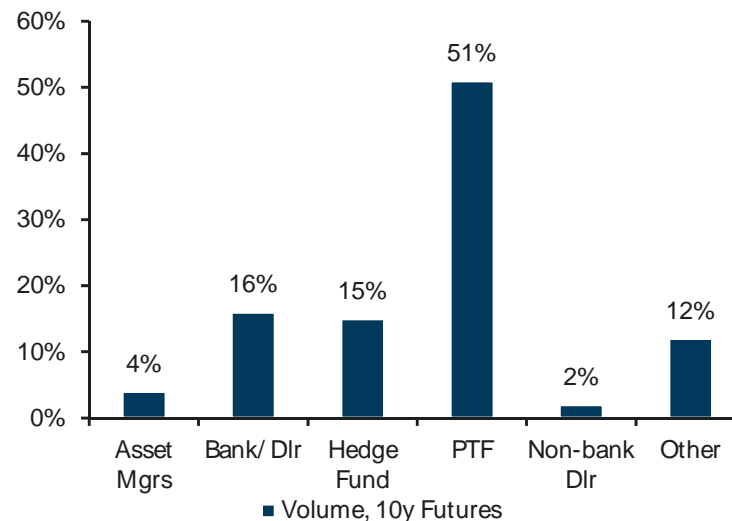
## Futures command a higher share of volume



## PTF are typically 56% of 10y volumes in cash space...



## ... and 51% in futures



PTFs trade more frequently, in smaller sizes and with lower fill ratios than bank-dealers